

**#1**  
**Atari**  
**Computer**  
**Magazine**

U.S.A. \$3.50  
CANADA \$4.50

# Antic®

The **ATARI®** Resource

JUNE 1985 VOLUME 4, NUMBER 2

## COMPUTER ARTS

**Atari, Casio  
& Yamaha Make  
Music Together**

**Generate  
3-D Action**

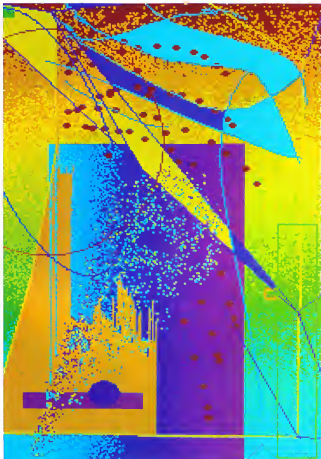
**Weave Color  
on Atari**

**New Graphics  
Commands  
from BASIC**

**Cover Contest  
Winners**

**GEM Seminar  
ST Support**

**10 Type-In  
Programs  
(25 Pages of Listings)**



# Flight Simulator II

For  
Atari computers  
with 48K memory



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

**See your dealer . . .**

or write or call for more information. For direct orders please add \$1.50 for shipping and specify UPS or first class mail delivery. American Express, Diners Club, MasterCard, and Visa accepted.

**Order Line: 800/637-4983**

**subLOGIC**  
Corporation  
713 Edgebrook Drive  
Champaign IL 61820  
(217) 359-8482 Telex: 206895

## LOTSABYTES CONTINUES THE WAR!

**WAR** on high prices! We're going to put an end to the software price ripoff. And **YOU** can help! Just keep those orders coming while you continue to enjoy the **quality, quantity, selection and low prices** that you deserve. Our National Public Domain Copy Service will save you time, tedious work and money. And our **exclusive** distribution of **sharply discounted** commercial programs will bring you some of the finest programs for the lowest possible price, usually 50% and more off retail! You continue to get **FREE BONUSES** with each purchase of three or more disks.



### MUSIC MAJOR!

Learn the basics of music with this light-hearted but very thorough approach. Covering such topics as note recognition, key signatures, note counting, and much more, it is designed for use by both the individual student and music class. This program includes a thoroughly illustrated manual and offers a **QUIZ MASTER** utility that allows the teacher or the self-taught student to create their own A-B-C-O type tests, with a sample quiz included. **Originally \$39.95 Only \$14.95**

### PUBLIC DOMAIN SOFTWARE

<b>#1</b> <b>GAMES</b> Two full disk sides packed with over 25 games including some Arcade quality <b>\$7.95</b>	<b>#2</b> <b>UTILITIES</b> 25 powerful programs to help you get the most out of your Atari computer <b>\$7.95</b>	<b>#3</b> <b>AMS MUSIC</b> 25 Advanced Musicsystem files including a new Player program 2 sides <b>\$7.95</b>	<b>#4</b> <b>GAMES</b> All different! 14 more better games on 2 disk sides. Some Arcade types <b>\$7.95</b>	<b>#5</b> <b>EDUCATION</b> Loaded with 26 programs on 2 disk sides. Fun learning for the whole family <b>\$7.95</b>
<b>#6</b> <b>AMS MUSIC</b> 25 all-time favorites with a Player program 2 sides <b>\$7.95</b>	<b>#7</b> <b>GAMES</b> Two disk sides packed with 14 more great games. Some Arcade types <b>\$7.95</b>	<b>#8</b> <b>UTILITIES</b> 17 more power-packed utilities to help unleash full potential of your Atari <b>\$7.95</b>	<b>#9</b> <b>GAMES</b> Two full disk sides filled with 17 of the best and most recent Some Arcade <b>\$7.95</b>	<b>#10</b> <b>UTILITIES</b> A new assortment of 17 great and powerful programs. Don't miss it! <b>\$7.95</b>
<b>#11</b> <b>GAMES</b> <b>NEW!</b> Our newest, 2 sides. Filled with great games <b>\$7.95</b>	<b>#12</b> <b>ADVENTURES</b> <b>NEW!</b> 2 full disk sides filled with text adventures <b>\$7.95</b>	<b>#13</b> <b>EDUCATION</b> <b>NEW!</b> 2 disk sides filled with something for everyone <b>\$7.95</b>	<b>#14</b> <b>AMS MUSIC</b> <b>NEW!</b> 2 sides filled with great music and a player program <b>\$7.95</b>	<b>#15</b> <b>UTILITIES</b> <b>NEW!</b> Another assortment of fine programs. Not to be missed <b>\$7.95</b>

### LotsaBytes EXCLUSIVES

#### AWACENDO MUSICSYSTEM II

by LEE ACTOR

Allows you to create music with your Atari computer! All new machine code.  
\* Control over pitch, duration, envelope, dynamic level, meter, tempo and key.  
\* 4 independent voices.  
\* 512 octaves per voice.  
\* Save up to 8200 notes.  
\* Custom DOS.  
\* FULL instructions.  
\* 24K disk.  
**Originally \$29.95 Only \$14.95**

#### ORIGINAL ADVENTURE

by Bob Howell

For all Atari computers. The Original Colossal Cave Adventure faithfully reproduced from the mainframes. This is the one that launched the whole Adventure craze of today!  
\* Two mazes.  
\* 130 rooms.  
\* Deadly Dragons.  
\* Nasty Dwarves.  
\* Temptuous Troll.  
\* The Pirate & More!  
\* 86 coded hints.  
\* SAVE RESUME.  
\* 40K disk or 32K tape.  
**Originally \$24.95 Only \$14.95**



### QUALITY WORD PROCESSING

**ESI WRITER!** At last a brand-new Word Processor that has more features and is easier to use than anything else available for the Atari. Easy for the beginner to use, it asks questions and remembers the answers. **ESI WRITER** is so sophisticated that it has many more features we don't even have room to mention! Works with ANY Atari.

- \* Reads any text file.
- \* Built in Help screen.
- \* Very fast!
- \* Works with ANY printer.
- \* Instant top, bottom or text location without scrolling!
- \* Every printer feature.
- \* **DISK ONLY!** (Any Atari)
- \* Search and replace.
- \* Block move text.
- \* Page eject/start.
- \* Set margins/lines etc.
- \* Full justification.
- \* Print headers etc.
- \* Block delete etc.
- \* Change video color.
- \* Over 50 pages of docs and tutorials.
- TRUST US ON THIS ONE! YOU WILL LOVE IT!**
- Originally \$49.95 LotsaBytes price \$19.95**

### \* \* \* FREE BONUSES \* \*

Now for each 3 disks ordered you may choose any 1 of the following disks **FREE!!**

... buy 3 - get 1, buy 6 - get 2, buy 9 get 3 ...

- The Atari XL TRANSLATOR DISK that enables XL owners to use most 400/600 software. **FREE!!**
- Or --
- An all different AMS MUSIC disk with Player. **FREE!!**
- Or --
- Your choice of one of the P D disks -- #1, #2, #3, #4, #5, #6, #7, #8, #9, or #10 (specify one). **FREE!!**

### GREAT GAMES!

**SPACE GAMES:** Three games for one low price! In **Aliens** you can get them all and the pace keeps getting faster. When you do get rid of most of them, you are left in a space quadrant peppered with mines. Will you **Survive?** If you do, you must penetrate the alien's spaceship, survive a **Robot Attack** and get back your stolen cloaking device! Interested?  
**\$24.95 list LotsaBytes price: \$9.95**

**THE BEAN MACHINE:** By Steve Robinson is an Award Winning Arcade game that will drive you crazy balancing a series of beams while trying to get all the beans to roll down, without touching, all the while avoiding strange creatures who drop in to steal the beans. It's addictive!  
**\$24.95 list LotsaBytes price: \$9.95**

**GIGGERBONK:** Another Award Winning game by Steve Robinson challenges you to find your way through a continuously scrolling maze while avoiding some really strange creatures. Along the way you will need to Bomb some of them, but watch out for the bombs!  
**\$24.95 list LotsaBytes price: \$9.95**

**GUESS WHAT'S COMING TO DINNER** lets you try to maneuver a snake through 7 levels if you can keep it from starving or being electrocuted. Lots of surprises! One or two players.  
**\$24.95 list LotsaBytes price: \$9.95**

### CREATIVE LEARNING ADVENTURES

Agas 4 to 10 - Disk only

- Hours of educational fun playing 3 exciting creative adventures with a friendly alien learning about our planet Earth. Hand-eye co-ordination, drawing and music skills are emphasized.  
**\$24.95 list LotsaBytes price: \$12.95**
- Four challenging learning games that are the favorites of our friendly alien. Helps your child to develop logical reasoning ability.  
**\$24.94 list LotsaBytes price: \$12.95**
- These 3 Fun-Day learning games will help with intellectual development, hand-eye co-ordination, logic, spatial and analytical abilities.  
**\$24.95 list LotsaBytes price: \$12.95**

Full 100% Replacement guarantee: Any disk found to be defective will be replaced free and we will also refund your return postage! All orders shipped by First Class U.S. Mail. Add \$1.95 shipping and handling for 110.0 disks. Add \$2.95 for 6 to 12 disks. California residents add 6% sales tax. Outside of U.S. & Canada add 15% U.S. Funds only. We accept checks or Money Orders. Sorry, no COD or Charge Cards. Allow three weeks for personal checks to clear.

# LOTSABYTES

15445 Ventura Blvd., Suite 106, Sherman Oaks, CA 91413

Atari is the registered trademark of Atari, Corp.

# Join the Atari® Safari of Software and Books

## Get Out of the Thick of Things

If too many bills are piling up around you, *The Home Accountant™* will put you back on safe ground. *The Home Accountant* handles cash, checkbooks and credit cards. Custom retrieval allows you to print all the information you need, including net worth, balance statements and checks.

## Learn to Create Wild Graphics

Create your own electronic art with *Atari Color Graphics: A Beginner's Workbook*. So simple to follow, even a complete novice can program stunning graphic displays by following a few easy steps.

## Program Ferocious Games

*Atari Graphics and Arcade Game Design* will teach you how to design quality games on the Atari. A series of flow charts, text and commented code explain everything in detail. Five complete games show you how it's done.

## Conquer Your Computer

If you're wondering what to do with your Atari now that you've played countless games, get *The Atari User's Encyclopedia*. This book tells everything you need to know for creative and satisfying use of your computer.

Put an end to the computer software and book hunt today. Write or call our Product Information department for the dealer in your area.



Arrays, Inc./Continental Software  
Arrays, Inc./The Book Division  
Attn: Product Information  
11223 S. Hindry Ave., Los Angeles, CA 90045  
(213) 410-3977



The Home Accountant hardware requirements: 48K, 640K, 128K, or two disk drives, printer (133 Cid optional).  
The Home Accountant is a registered trademark of Arrays, Inc./Continental Software. Atari is a registered trademark of Atari, Inc.

## FEATURES

<b>ANTIC AT FIRST GEM SEMINAR</b> by Nat Friedland Converting IBM PC software to Atari	12
<b>PIXEL SCANNER</b> by Lyn Buchanan Enhance your picture details like NASA does	14
<b>ATARI IN LIGHTS</b> by Michael Ciraolo Theater lighting designer's Atari CAD	16
<b>COLOR PALETTE</b> by John Felton Joystick selection of program hues	21
<b>PRINT SHOP</b> by Jack Powell Smash-hit graphics software now in Atari version	25
<b>COLOR INKLE LOOM</b> by Gerald Hagopian Your Atari master weaver	29
<b>PLAY IT AGAIN, ATARI!</b> by Nat Friedland Atari makes MIDI music with Casio	30
<b>GUITAR TUTOR</b> by Frank Imburgio and Grace Barry Learn and play guitar chords on your Atari	35
<b>THE MUSICIAN</b> by Angelo Giambra Type-In "music construction" software	37
<b>VIEW 3-D</b> by Paul Chabot Rotate and view 3-D objects in ACTION!	38
<b>G.U.P. THE GREAT</b> by Darek Mihocka Fast graphics power from BASIC	45

## DEPARTMENTS

COMMUNICATIONS	
<b>THE #1 SYSOP</b> by Michael Ciraolo Ron Luks of 51G*Atari	8
LOGO	
<b>TURTLE PIANO</b> by Craig McBein Easy Logo keyboard music	10
MICROSCREENS	
<b>COLOR-THE-COVER CONTEST WINNERS</b>	22
ASSEMBLY LANGUAGE	
<b>TURBO TYPO II</b> by David McLaughlin Speedier TYPO II with three-line fix	43
GAME OF THE MONTH	
<b>HELICOPTER ROUND-UP</b> by Walt Bulawa The sky cowboy game	48

## SOFTWARE LIBRARY

TYPE-IN LISTINGS SECTION		51	
I/O BOARD	6	ADVERTISERS' LIST	79
HELP	7	ATARI SERVICE CENTERS	80
PRODUCT REVIEWS	77	NEW PRODUCTS	82
SHOPPER'S GUIDE	79		

A few notes on Print Shop ..... 25



Color-the-Cover winners ..... 22



Cows? Helicopters? You bet! ..... 48

Publisher  
James Capparel

Editorial Department  
Nat Friedman, Editor, Jack Powell, Technical  
Editor, Michael Cirolo, Associate Editor,  
Charles Jackson, Program Editor, Ron Lake,  
On-Line Editor

Contributing Editors  
Gael Evans, Ken Harms, Jerry White, Suzi  
Subeck, Anita Maling

Art Department  
Marie Tapscott, Art Director, Diane Lindley,  
Production Supervisor, Linda Tapscott, Ad  
Production Coordinator, Julianne Ososki,  
Production Assistant

Cover Artist  
Darcy Gerberg

Contributing Artists  
Rosland Solomon, Reanne Benjamin

Circulation Department  
Les Boske, Manager, Hun-Kim Kim, Peter  
Walsh, Shipping, Monica Borell, Subscrip-  
tions, Eve Gowley, Dealer Sales, Doug  
Millum, Dealer Sales, Brenda Kringle, Cir-  
culation Consultants

Accounting Department  
V.J. Briggs, Manager, Brenda Oliver, Accounts  
Receivable, Lucie Katz, Credit Manager,  
Andrew Pope, Customer Service, Reanne

Marketing  
Gary Yost, Manager, Marketing Services, Steve  
Randall, Advertising Sales Director, Harvey  
Bernstein, Advertising Sales, Garland Asso-  
ciates, East Coast Representative

Maria E. Chavez, Receptionist

General Office (405) 957-0886  
Advertising Sales (405) 661-3499  
Credit Card Subscriptions  
outside California (800) 225-1677 ext. 133  
inside California (800) 772-2500 ext. 133  
Subscription Problems (405) 957-0886

June 1985, Volume 6, Number 2

**Antic**—The Atari Resource is published twelve times  
per year by Antic Publishing. Editorial offices  
are located at 524 Second Street, San Francisco, CA  
94107. ISSN 0735-2527. Second Class Postage paid at  
San Francisco, California and additional mailing offices.  
POSTMASTER: Send address change to **Antic**,  
524 Second Street, San Francisco, CA 94107.

Editorial submissions should include program listing  
on disk or cassette, and one file on media and paper  
if text was prepared with a word processor. Media  
will be returned if self-addressed stamped mail is  
supplied. **Antic** assumes no responsibility for an  
unsolicited editorial material.

Neither of this publication may be reproduced, stored  
in a retrieval system, or transmitted, in any form or  
by any means electronic, mechanical, photocopying,  
recording, or otherwise, without the prior written  
permission of the publisher.

**Antic** is an independent periodical not affiliated in  
any way with Atari Corp. Atari is a trademark of Atari  
Corp. All references to Atari products are understood  
and should be so noted.

**Antic** is a registered trademark  
of Antic Publishing, Inc.

Copyright ©1985 by Antic Publishing  
All Rights Reserved. Printed in USA.

## BEATING THE ZURK BLUES

I've been having problems typing in line  
5000 of "Zurk" (March 1985). Please help.  
Douglas Hlatt  
Largo, FL

*Line 5000 contains the phrase  
"SET" = LI \* 256". We are going to assume  
here that you're using the BASIC XL car-  
tridge from O.S.S. This BASIC is more  
powerful than Atari BASIC and has  
several extra commands. One of these  
commands is SET and thus, it cannot be  
used as a variable without special  
precautions. See page 131 of your BASIC  
XL manual on this. "ZURK" runs as  
published and should work in BASIC XL  
if you change all the SETs to some other  
variable name —ANTIC ED*

## TYPO II TYPO

TYPO II (January 1985) does not work on  
my 1200 XL. It doesn't accept the SET  
commands. Any suggestions?

Mary Mueham  
Houston, TX

*The original instructions in "How to use  
TYPO II" read "BASIC XL cartridge  
owners type SET 5,0", etc. We have  
subsequently cleared up the wording.  
—ANTIC ED*

## SOME THOUGHTS ON AL

In most issues of **Antic**, there are type-in  
programs listed in BASIC as well as in  
assembly language. I've spent many hours  
typing in AL programs and found that  
none worked. In particular, I've had prob-  
lems with "Keyboard Commander",  
(March 1985). Can you help me?

Henry Jennings  
Detroit, MI

*If the AL listing is an addendum to a  
BASIC program, it's printed primarily as  
a study example for serious AL program-  
mers. Unlike BASIC, machine language  
is unforgiving. One mistyped bit of code  
and your computer will lock up.*

*"Keyboard Commander" loads into  
Page Six. So does MAC/65. Unfortunately,  
there is only room for one program in  
Page Six, and the big orange super-  
cartridge is not about to let it be  
"Keyboard Commander".*

*"Keyboard Commander" will run on  
Atari Assembler Editor, Atari BASIC and  
ACTION! It will not run on MAC/65  
unless you relocate the code.—ANTIC ED*

## OKIMATE 10 REVISTED

I think that your comments on the Oki-  
mate 10 were a bit harsh. Perhaps you were  
using the wrong type of paper. True,  
dumps on plain paper are barely readable.  
However, I used black on white dumps on  
thermal paper (I use IBM PC Compact  
Printer Paper, # 1503926). For color prints,  
try Scotch 501 Transparency Film for Plain  
Paper Copiers.

Alan Fillmore  
Bakersfield, CA

*Several readers have suggested that we  
used the wrong type of paper in review-  
ing the Okimate 10. Well, **Antic** finds it  
refreshing to be considered too tough on  
an advertiser for a change. We recognize  
that some readers have had better results  
with that printer than we did.*

*When we reviewed the Okimate 10, we  
used the paper, printhead, printer and  
ribbons provided by the Okimate Cor-  
poration. We followed the company's  
instructions—but then wound up spend-  
ing most of a workday tinkering with the  
configuration in order to get even the  
slightly improved results we printed.*

*We assume that a major company  
would ship a working, pre-tested piece of  
equipment to assure the best possible  
review. If we were, in fact, provided with  
a bad printhead that we didn't recognize  
at the time, this is a noteworthy problem  
that might be faced by anybody purchas-  
ing the printer.—ANTIC ED*

## OF BITS AND BYTES

What is so special about the number 256,  
as in 10 PEEK M(195)\*256?

Kevin A. Scott  
Algonquin, IL

*The highest number you can have in any  
one address is 256. Your Atari is an eight-  
bit, binary computer. "Binary" means it  
only understands two numbers, 0 and 1.  
These numbers are called "bits". Eight bits  
make a "byte" and the maximum dif-  
ferent combinations of eight bits is 256  
(0-255).*

# i/o board

Since memory is nothing but a sequence of byte addresses, and we want to reach more than 256 of them, we put two bytes together and have 256 combinations times 256, or, 65,536.

These double-byte numbers are called "words" and the two bytes that make up a word are called the "low-byte" and the "high-byte". When the low-byte goes beyond 255 (remember 0-255) it returns to zero and the high-byte is upped by one.

This means that each unit in the high byte is equal to 256.

Now if, for example, the high-byte contains 2, its value is  $2 \times 256$ , or 512.

And if the low-byte contains 50, the two bytes together equal 562. Words are stored in the Atari in a backwards order of low-byte followed by high-byte. If the number 562 was stored in locations 88 and 89, 88 would hold 50 and 89 would hold 2. The formula to find the values of these

two locations is:  $WORD = PEEK(88) + PEEK(89) \times 256$ —ANTIC ED

## BATTERIES MOVES

Batteries Included, publishers of PaperClip (reviewed in Antic last month) moved to 30 Mural Street, Richmond Hill, Ontario, L4B 1B5 Canada. However, please don't order products from them by mail. **A**

# help!

## KWIK DUMP

"Kwik Dump" (Antic, March 1985) contains an error in line 1070. The last number in that line should be 27 instead of a zero.

## THIEF

Readers are having problems typing in "Thief", the March 1985 Game of the Month. The game does run as published, but if your TYPO II code for line 1105 is UK, make sure that the inverse [p] in that line is lower-case.

## WIDE TEXT

Bill Morris's "Wide Text" (Antic, January 1985) cannot print a double-width [Z]. Substitute these lines to correct this problem:

```
In the assembler listing:
0600    CPY #27#8    ;8
        BYTES TO A LETTER
```

```
In the BASIC listing:
CT 20130 DATA 216.208.2
13.185.0.224
```

## S.A.M. SOURCE CODE

The assembly language listing of "S.A.M. Handler" (Antic, February 1985) contains an error in line 900. LDY #01 should read LDY #01. The BASIC listing is correct, however, and runs as published.

## TYPO II BONUS

Ever since our improved TYPO II program typing proofreader began appearing in January, Antic has been getting letters that ask for TYPO II codes to the most popular and difficult pre-1985 programs. These will be in the issue Next Month!

You'll find the TYPO II line codes for the four most-requested listings—"Biff-drop," "Escape From Epsilon," "Advent X-5" and "Adventure Island." And we'll print codes for more Antic golden oldies if we get enough requests.

## CHECKED 100 TIMES

I typed in a program from the July 1984 issue and it still doesn't run. I checked my listing 100 times and I have not found a typing error. I also checked the following issues for an error report but didn't find one.

H. Reynaldos  
Miami, FL

*This is typical of many letters we receive from frustrated readers who type in a program only to find it does not run. They may check it many times and when it still won't work, they naturally suspect a publishing error.*

*Antic does make mistakes, as you can see from the magazine's Help! items and the monthly Error File. But the great majority of program problems come from readers mistyping the listing or misunderstanding the instructions.*

*If you are having problems with a program that was published more than three months ago, and you don't see a correction printed in either Help! or Error File, you can bet the error is on your end.*

*That's because most major program problems are discovered within two weeks of publication! But due to the long turnaround time for four-color national magazines, the sooner you can expect that error to appear in Help! is two issues later. For example, a February error should show up in April's Help!*

*Program errors which appear in Help! are transferred the following month to the Error File where they remain for approximately six months. A complete index of all Antic errors can be found on our ANTIC ONLINE service on CompuServe.*

*We test all programs on Atari 800s, 1200XLs, 600XLs and 800XLs using both cartridge and built-in BASIC. We use Atari 810, 1050 and Indus GT drives with Atari DOS 2.05, single density.*

*Some of our listings are more difficult to type in than others. If you are just starting, we strongly suggest that you first try the shorter listings and avoid the frustration of typing in very long listings with Atari special characters.*

*When using TYPO II, be careful that you have typed in every line. It's not so hard to miss one entire line and TYPO II won't spot it. If you're sure all the lines are there and the program still won't run, recheck each TYPO II line code.—ANTIC ED*

**A**

# THE #1 SYSOP

Ron Luks of SIG\*ATARI

by MICHAEL CIRAOLLO,  
Antic Associate Editor

Back when the IBM PC had just come out and Ron Luks was thinking about buying one, a friend showed him Atari's classic *Star Raiders* game. Luks bought an Atari to play with while he was on the IBM waiting list. As it turned out, he never bought an IBM PC.

Instead Luks, 33, became the system operator (sysop) of SIG\*Atari on CompuServe—the world's largest Atari bulletin board, with some 6,000 enrolled members.

At the time he bought his Atari, Luks was a stockbroker and money manager who traded options on the American Stock Exchange. Previously he had taught scuba diving in Miami for a few years. "Fooling around with the Atari was light and fun, like a puzzle, after a high-pressure day in Wall Street," he said.

One of Luks's first peripherals was a modem. "I got the Hayes SmartModem, an 850 interface and the original TeleLink cartridge, which came with a CompuServe Starter Kit."

## EARLY COMPUERVE

Back then, CompuServe wasn't primarily concerned with sponsoring special interest groups (SIGs). So when Luks first logged onto the system, he "looked all over for the word Atari." It wasn't there. Luks then began to spend time in the Popular Electronics magazine online edition.

"In those days, the network had no online sysops, no help. It was like a

Once you read this latest issue of Antic, log onto CompuServe and type GO ANTIC—you'll see a preview of the magazine's NEXT issue!!

In the ANTIC ONLINE preview, you'll find a comprehensive look at all the stories and programs in the next Antic Magazine—the July Computer Challenges issue.

You'll even find a major excerpt or two from the upcoming issue's featured articles—such as our Atari chess software tournament or our interview with the boss of Strategic Simulations, Inc.

And as a special CompuServe bonus, you can now download from SIG\*Atari the complete program that won Antic's Color-The-

Cover Contest. This scrolling two-screen picture won't be on the monthly Antic Disk until next issue, even though you'll find its photo in the current magazine. To download this file, type DL4 at the SIG\*Atari prompt. This puts you into Data Library 4, where BRO WINNER.\* is what you type next. If you're using an Xmodem protocol program (such as HomePak or Chameleon) choose the WINNER.XMO file. With TSCOPE, use the WINNER.BIN file.

ANTIC ONLINE special bulletins may be downloaded for reprinting in newsletters of users groups affiliated with the Antic Worldwide Users Network. Officers of Atari users groups may write to the Antic WUN Coordination for details.

big puzzle," Luks said. "I kept leaving messages—How can I do this? Why can't it do that?" The messages were picked up by the sysop about once a month.

CompuServe finally collapsed under Luks' badgering. "They made me an assistant sysop and gave me a free flag," which meant he would have free access to the network. This was a good deal for a man who had monthly connect bills "approaching four figures".

## FILLING PCS-132

One thing led to another, and Luks

was soon allowed to set up an Atari board. "They said 'There are some empty pages at PCS-132' and I got to fill them up." Luks took as assistant sysops a few of the most active members interested in Atari—such as Michael Reichmann of Batteries Included and programmers Steve Ahlstrom (SynFile +, PaperClip) and Russ Wetmore (Preppik, HomePak).

After an all-nighter over cappuccino in Greenwich Village, Luks came up with the name SIG\*Atari. "It's different from 'the Atari SIG,' the 'Radio Shack SIG' and so on. Atari is a word

continued on page 19



For Your Atari Computer  
TRS 80 Color I, III & 4 • Apple • Commodore • IBM PC Jr.

# Dorsett Educational Software

## Passes the Cost-Efficiency Test!

**DORSETT Classroom A Room #1**

*Excellent Work! (A+)*

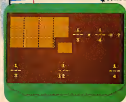
PROGRAMS OFFER	DORSETT	A	B	C	D
1. Audio Narration	Blue				
2. Synthesized Voice		Red			
3. Multiple Choice	Blue		Yellow		
4. Clear Graphics					Red
5. # of Courses				Green	
6. Variety			Yellow		
7. Self-Paced				Green	Red
8. Program Length	Blue	Red			
9. Compatibility			Yellow		
10. Yrs in Education					
11. Price p/program	\$3.75	\$4.95	\$9.95	\$29.95	\$32.95

DORSETT COURSEWARE IS COMPATIBLE WITH:  
ATARI 400/600/800/1200, APPLE II, TRS 80 I, II, & 4,  
COMMODORE 64 & IBM PC JR. COMPUTERS.

\*PRICE PER PROGRAM IN A 16-PROGRAM SERIES.

For computer assisted instruction, our software more than passes the test...it EXCELS! With over 1000 educational programs designed specifically to concentrate learning for all users, from kindergarten level to advanced individual studies, from slow learners to exceptionally bright students, you'll get positive results with our quality, economically-priced courseware.

• 500 Programs Available for TRS 80 Color, 400 for IBM PC Jr.



You may be able to reduce your taxes by

- Income averaging
- Income splitting
- Tax shelter



## Interactive Tutorial Programs

Over 1000 Programs with Full Time Audio Narration, Pictures & Text!

### We're Your Educational Software Source

Course	No. of Programs
Reading	256
Mathematics	128
Comprehension	48
History	32
Algebra	16
Spelling	16
Government	16

16 Programs in each of the following:  
Carpentry • Electronics • Health Services  
Office Skills • Statistics • First Aid/Safety  
Economics • Business • Accounting  
Psychology

AND MANY MORE!

Dealer inquiries welcome

Atari 400/600/800/1200 computers require the Atari cassette recorder and the Dorsett 4001 Educational Master Cartridge, \$9.95. Apple II, TRS 80 I, II, & 4, and Commodore 64 computers require respective conversion kits (plug-in board and stereo cassette player), \$60.00. For the IBM PC Jr. a cassette adapter cable and a good cassette recorder are required. A Radio Shack CCR-51 or CCR-52 is recommended. \$69.90 for an album containing a 16-program course (8 cassettes with 2 programs, each at \$3.75 per program) \$6.00 for a 2-program cassette.

Send for a catalog of over 1000 programs for Atari, TRS 80, Apple, etc.

For more information, or to order call:

**TOLL FREE 1-800-654-3871**  
IN OKLAHOMA CALL (405) 288-2301



**DORSETT**  
Educational Systems, Inc.

Box 1226 Dept A Norman, OK 73070





# TURTLE PIANO

## Easy Logo keyboard music

by CRAIG McBAIN

*A simple but adaptable Logo program that plays a musical scale from the Atari keyboard. Works on all Atari computers of any memory size. Disk or cassette.*

Children love to sit in front of a piano keyboard and pound out simple melodies. The child's joy comes from immediate success at making music and a rare chance to control the environment.

With an Atari, Logo and just a few short commands, children can have the same kind of musical fun they would have with a piano, but with a little extra learning thrown in.

Turtle Piano converts the computer keyboard's home row—A, S, D, F, G, H, J, K, L, ;, + and \*—into a 12-key piano that plays a do-re-me scale in the Key of C without sharps and flats.

It also changes the screen turtle into an eighth note which jumps around to the appropriate spot on a musical staff whenever a note is played. As each note is played, its letter-name is also printed on the screen.

Turtle Piano can also remember your compositions so you may listen to them over and over again.

Though it is not a particularly complex program, Turtle Piano is an engrossing project for young computer users and programmers. So type in Listing 1 and SAVE a copy before you RUN it.

### HOW IT WORKS

BEEP, the heart of the program, uses the first sound channel (TOOT 0) to play the notes. After you have typed in the BEEP procedure, if you type BEEP followed by a number greater than 14 you will hear a nice note. The number 260.7 will give you Middle C. Why? A violin string (or anything else) vibrating at 260.7 cycles per second produces a Middle C.

The PLAY procedure ties the home row keys to their assigned pitch values. If a key is pressed which is not one of the home row keys, PLAY will output a frequency of 50000 (too high to hear). So you can use the space bar, for example, as a rest between notes. PLAY, using the SETY command, also draws the turtle on the staff.

Type BEEP PLAY "A to hear Middle C. PLAY takes the input character [A] and searches for its corresponding pitch value (260.7). PLAY passes this value to BEEP, which plays the appropriate note.

Note the relationship between the values for Middle C (260.7) and High C (521.5) in the PLAY procedure. Now, look at the values for the E and F tones. The higher note in each pair is double the pitch value of the lower note. This is always true. BEEP2, the next procedure, uses this fact to produce interesting results.

Try BEEP2 a few times and compare it with BEEP. It uses the second

sound channel (TOOT 1) to play a tone which has half the pitch value of the first note. For example, if you press the [A] key, BEEP2 plays Middle C and the tone one octave below it.

We use the GETNOTE procedure to check the keyboard and store our notes. GETNOTE passes each note to the REMEM procedure, which stores the notes in the variable LINE.

Type [START] to run the program. Now, press the [Y] key to start the piano. This invokes the START procedure. The [C] key calls the CLEANUP procedure which erases the text window and erases all your old tunes stored in LINE. If the [R] key is pressed, the REPLAY procedure will replay the list of notes stored in LINE.

The procedure REPLAY is really tricky. This recursive procedure removes the top note from LINE, plays it, and discards it. Then, it starts again, playing the first note on the shortened list. REPLAY continues to remove notes from the top of LINE, play them and discard them until LINE is empty.

The graphics portions of the program need little comment except perhaps for the LOGO names "STAFFH", "STAFFLO", and "NOAT". Don't forget to type these, too. These variables contain lists of numbers which tell the computer how to reshape the turtles into musical notes. The turtles are reshaped in the SETUP procedure with the PUTSH command.

continued on page 19

# C'mon, Cut it out!

**Can \$79.95 buy me an Atari 1030 Modem  
and software package?**

**YES!** An Atari 1030 Modem guaranteed to work with your Atari Computer can be yours—all you need is at least 16K and a telephone line—you don't even need a disk drive.

The Atari 1030 Modem is an easy to use, high tech, high quality modem which automatically uploads to your Atari Computer.

And, with a disk drive you

can take advantage of the disk communication software (included at no extra cost). This free package also includes introductory subscriptions to Compuserve (access to hundreds of free programs) and Dow Jones Retrieval Services at no additional cost.

**Cut it out! Don't wait! Act now!**  
Take advantage of this incredible offer—Atari quality at a lower price than any other modem!

**NO INTERFACE REQUIRED**



Send coupon to  
ADD-ON Systems • 524 2nd St., San Francisco, CA 94107

**YES!** I want this extraordinary communications value! I'm ordering now so I can receive:  
• 1 ATARI 1030 300 baud modem with built in software • Free Introductory Time on: Dow Jones, Compuserve • Disk Communications Software

The suggested retail value is \$199.95 MY PRICE IS ONLY \$79.95. Send me \_\_\_\_\_ number of packages at \$79.95 per package to

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Please make check payable to ADD-ON Systems.  
Payment enclosed ☐ check ☐ money order  
Bill my ☐ Mastercard ☐ Visa

Credit Card Orders Only Call Toll Free  
800 227 1617 X133  
800 772 3545 X133 (inside CA)  
California residents add 6.5% sales tax.  
Add shipping charges of \$2.75 per modem.

Canadian residents please send U.S. dollars.  
Allow 2-4 weeks for delivery.  
Prices subject to change without notice.  
Delivery subject to availability.

ID# \_\_\_\_\_

Expires \_\_\_\_\_

# ANTIC AT THE FIRST GEM SEMINAR

## *Converting IBM PC software to Atari*

by NAT FRIEDLAND, *Antic* Editor

**A**ntic was the ONLY Atari Magazine present at the first GEM Software Developers Seminar held at Monterey, California in February by Digital Research, Inc. DRI created the "Macintosh-like" GEM operating interface that is being used for the new 16-bit Atari ST computers.

GEM has aroused especially wide interest in the computer industry because it's supposed to make it simple to convert software between the IBM PC and clones, the Macintosh, the Atari ST and any other computer that GEM licenses a version for.

Some of Atari's top technical executives were on hand, debating a working ST with a preliminary version of Atari GEM burned into ROM.

Antic was told that Atari still considers itself on schedule for bringing the first production ST computers onto the market in April. Full ST production capacity won't be reached until June. The 10-15 megabyte hard disk for the ST will show up in the summer.

### **ATARI CAD/CAM?**

Remember the 32-bit Atari we reported Jack Tramiel talking about at his November press conference? Well, apparently it is well along in development. Atari still hopes to meet Tramiel's goal of unveiling the machine at the April electronics fair in Hanover, Germany.

Every time Atari engineers talked about the 32-bit computer in Monterey, delighted smiles appeared on their faces. The computer was described to Antic as a "VAX minicomputer on a chip" and a "\$40,000 CAD/CAM computer graphics workstation that will sell for under \$2,000."

### **LEARNING ABOUT GEM**

As for the GEM Seminar itself, the \$800 workshop was highly technical and directed at professional consumer-software programmers who were thoroughly experienced with the C language or with Macintosh window program development.

The Seminar sessions were taken up with highly detailed discussions of GEM development nuts and bolts such as the strict interfacing procedures which are supposed to make "porting" GEM-based programs between different computers a routine one-day process.

Access to GEM windows, debugging, and correct embedding of transfer hooks were among the other technical topics discussed. All attendees were given the two-volume GEM Toolkit documentation. DRI's recommended professional development language was Lattice C, which costs around \$500.

It should be noted that the Seminar was specifically dealing with the just-completed IBM PC version of GEM. Six-disk beta test editions of GEM

were being sold to developers by DRI for \$500. The GEM Library software of prepared graphics routines cost extra.

The Atari version of GEM was not yet ready for beta testing at the time of the Seminar.

### **WETMORE SUMS UP**

Russ Wetmore, author of *Homepak* and *Preppie* as well as other major Atari programs, flew in from his Florida homebase to attend the seminar and then stayed on to see the MacWorld Show in San Francisco.

He spent time at Antic during this period and shared with us the viewpoints of a highly experienced Atari professional programmer.

"I think the developers at the Seminar fell into two groups. One group is totally sold on the GEM goal of making a lot of different computers compatible with each other," said Wetmore. "And for now they are willing to overlook any unanswered questions that came up during the sessions. The second group is taking more of a wait-and-see attitude."

Wetmore expresses some doubt that GEM software will port between different computers as easily as DRI says it will. He also feels that GEM lacks certain built-in features found in the Macintosh interface—such as a text editor—which will make it more

continued on page 19

# SURVIVAL OF THE SMARTEST ...

EXCITING, NEW  
& DIFFERENT!

Outsmart your Friends.  
Outwit the Dragon.  
Join the Quest.

Here are just a few of many screens.



#### THE CHALLENGE.

Over 2000 stimulating trivia/fact questions will send you rummaging through your personal memory banks. Answer correctly and advance in your quest while adding more gold to your treasure. Fail and you lose ground.



#### THE ACTION.

You may have to face and battle a ferocious dragon if you prevail, the dragon's cache of gold will be added to your treasure. If you fail, your journey will be slowed while you heal your wounds.



#### THE STRATEGY.

Each questing party consists of three characters, a Knight, Priest and Mage. Each has distinctly different physical characteristics, and all must complete the Quest! You must decide when to send them on to the next challenge.

Atari is a trademark of Atari, Inc.  
©1984—Royal Software

48K Atari Disk

\$39.95

Challenging  
excitement  
for 1 to 4  
adventurers



Outsmart your Friends • Outwit the Dragon • Join the Quest

Trivia Quest is a totally new concept in computer games that will challenge your mind ... test your arcade skills ... and call upon your best strategy.

PROGRAM COVERS FOUR DISK SIDES!

Royal Software

This exciting new concept in computer entertainment will keep you and your friends involved for hours and hours. This is probably the best party-game ever developed, and new question disks will be available.

**Optional:** Utility disk which allows you to create unlimited trivia questions and answers for educational or entertainment. The utility disk also includes over 1000 additional questions. **Utility disk \$24.95.**

Royal Software

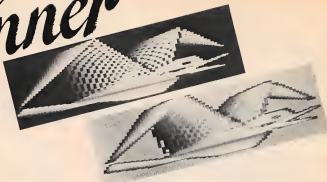


"Software fit for a king!"

2160 W. 11th • Eugene, OR 97402 • (503) 683-5361

Ask for Trivia Quest at your favorite Atari Computer Store or order directly from Royal Software. Use your MasterCard, Visa, American Express, or send check or Money Order including \$2.50 shipping and handling.

# pixel scanner



by LYN BUCHANAN

**T**he Atari's graphics capabilities are the best you can get for anywhere near the price. The problem most of us run into is that our pictures LOOK as if we did them ourselves.

This doesn't need to be the case, however. Pixel Scanner will perform automatic computer enhancement of a picture by using a process called pixel averaging, which gives a depth and fullness to an otherwise flat picture.

And that isn't all. By tinkering with this program a little, you can simulate the sophisticated computer enhancements used by NASA to bring out small details in satellite photos.

To get started, type in Listing 1, check it with TYPO II, and SAVE a copy.

The program includes a demonstration picture of a stick figure bird in Graphics 9 (lines 200-270), and the pixel averaging routine (lines 100-161). The picture was made using simple PLOT and DRAWTO commands; if you're enterprising, you can create your own picture by changing these commands in the demonstration picture.

The stick figure is drawn at the top half of the screen, leaving room for the enhanced version at the bottom.

## HOW IT WORKS

After the picture is drawn, the program looks at each pixel and its surrounding pixels, then places their

*This BASIC program introduces you to pixel averaging—an advanced graphics technique similar to the method NASA uses for enhancing satellite photo details. Pixel Scanner works on all Atari computers of any memory size. Disk or cassette.*

values into variables. This is done in lines 121-129 by means of the LOCATE command, which positions the cursor at a specified x,y coordinate on the screen and assigns the value of the byte for that data to a specified variable.

The format for a LOCATE command is:

LOCATE (x-coord),(y-coord),  
(variable)

The program then adds the values of all the variables together, and divides by the number of pixels sam-

## WHAT'S A PIXEL?

The word "pixel" is computer jargon for "picture element." It stands for the smallest controllable element of a screen display.

Naturally, pixel size is determined by computer and video resolution limits, as well as by graphics mode selection. In Atari Graphics 8 mode, for example, a pixel is one scan line high by one-half color clock wide—which essentially matches the resolution of a home television receiver.

pled (line 131). Using that average value, it then re-colors the center pixel, to make it blend more smoothly with its surroundings (line 141).

## PIXEL SEPARATING

The Pixel Scanner demo program blends pixels. It could just as easily widen the difference between pixels—as is done in satellite photos to distinguish between extremely small variations.

To do this, change the way the value of K is figured. In line 131, K is figured as the average of all the variables. It would be just as easy to make K vary by, say, 4 times the average, if you change the command COLOR K (line 141) into COLOR K\*4.

With a little experimentation, you will begin to find a wide variety of things to do with this routine. Other effects can be achieved by sampling only certain adjacent pixels and not others.

You might also try changing to Graphics 11 (line 201). You'll be surprised at the beautiful blends of colors which are produced.

*Lyn Buchanan is a civilian programmer at Fort Meade, Maryland. He is also a programming and systems analysis instructor.*

Listing on page 58



# MORE REAL POWER FOR YOUR ATARI

## DESK SET \$39.00

### Complete Desk Package

**CALENDAR**  
CALENDAR is a perpetual calendar, an appointment calendar and also a card file. The perpetual calendar is a calendar of every month, past, present or future. The appointment calendar allows up to 15 entries to be made each day.

#### CARD FILE

The card file is a mail list program which holds up to 200 addresses. The printing format of card file includes continuous lists, labels or envelopes. Files can be printed, all the files from one file number to another, by zip code, by state or by selected files.

#### LETTER WRITER

LETTER WRITER is a preformatted letter writing program. LETTER WRITER can be used for any number of applications involving entering, editing and printing text. LETTER WRITER is designed to be easy to use and does not require extensive training. While LETTER WRITER is not a full word processing system, it performs 90% of the functions used by hand to use and more expensive word processors. DESK SET also contains a program that allows you to combine Card File and Letter Writer for interaction.

#### FINANCIAL CALCULATOR

FINANCIAL CALCULATOR answers virtually any questions concerning the cost of money, loans, and interest earned on savings, loans and investments. Plus, this program will give a complete interest earned table and amortization table. This program is a must for anyone anxious about money.

#### FORECASTER

Forecast future events based on past information. Forecast profits, costs, sales trends, prices, test scores, virtually anything! Edit, save on disk and test various elements to determine the outcome. FORECASTER is a powerful "what if" program - a must for business.

Two drive + double density - 48K required

## HOME WRITER \$19.00

The HOME WRITER is an easy to use word processor which includes a carefully selected group of functions that are at your disposal immediately. The functions are as follows: SAVE, LOAD, REVIEW, PRINT-OUT, or EDIT. All the popular editing features available on the ATARI Home Computer in direct programming mode are also available with HOME WRITER. You may also search for phrases or strings, load off of either disk or cassette, and number pages automatically. Unlike other small word processing programs, HOME WRITER does not wrap-around when at the end of a line. Right and left margin justification is available for any type parallel printer.

48K

### ASTRA Double Disk Drives

True  
Double  
Density



Total  
Compatible

#### INCLUDES DOS

Big "D" Double Sided ..... \$595.00  
2001 Two Drive ..... \$495.00  
1620 Two Drive ..... \$349.00  
1620 quantities are limited.

## SMARTDOS \$39.00

- SMARTDOS is 100% density smart. SMARTDOS will sense the density of each disk in use and automatically reconfigure the entire system to that density.
- SMARTDOS does not require that a "system disk" has to remain in the drive, or be continually inserted and removed in order to use the DUP SYS commands.
- With SMARTDOS you may Copy with query, (eliminates specifying each item individually).
- Counter screens - which keeps the user informed as to what the system is doing and where in the task the system is.
- Disk testing for bad or unusual sectors that may be corrected.
- RESIDUP feature allows simple yet powerful full time availability of DUP SYS commands while leaving your program intact and ready to RUN.
- Minimum keystrokes for maximum power, e.g. a disk directory is done by pressing only one key - the drive number (great for Researchers, and "-" may be used to replace "x").
- The ability to run from 1 to 9 autorun files sequentially.
- Built in disk drive speed check.
- SMARTDOS is only 34 single density sectors long and works with all Atari computers with a minimum of 24K RAM.

## FILING SYSTEM \$19.00

FILING SYSTEM allows the user to configure any type of data file imaginable. Examples are recipe cards, mail lists, reminders for birthdays, check-ups, etc., complete inventories (home and business), personnel files, customer call-ups, price list, and much, much more. You may retrieve data using any field or combination of fields. Files also may be saved, sorted, and printed in a preset format that you configure. Uses either a single or a double density disk drive. 24K minimum.

## LETTER SYSTEM \$29.00

This disk contains both LETTER WRITER and MASTER LIST plus the necessary program that allows for combining the two programs for interaction. Call a file off disk, type a letter and (with the night printer) type on envelope, or just run one letter after another. All of the powerful features of both LETTER WRITER and MASTER LIST plus the ability to use them together.

Includes 35 pre-typed letters

## BILLING/INVENTORY \$49.00

BILLING allows you to do invoices, posts to account cards, deductions from inventory and payments. There are provisions for shipping, discounts, no charge items and tax. BILLING also allows maintenance for up to 500 customer files, and printing of the daily total of billings. A flowchart is given to show the step-by-step direction that the program takes. Allows for up to 300 inventory items. 48K.

## STAT-PLUS \$29.00

STAT PLUS is the most powerful statistic tool we have seen. Run sample sizes, mean, variance and standard deviation. Do probabilities using binomial, poisson or normal distribution. Also, do students' t-test, Mann-Whitney U test and Chi Square. Do linear regressions, may use 1-12 independent variables, interact a sample from one module to another, edit, rank and print out. 24K min.

## ACCESSORIES

Disk Doubler .....	\$14.00
5' I/O Cable .....	\$12.50
1' I/O Cable .....	\$ 8.50
Transformer .....	\$18.50
IBX 10 SS/DD Disks w/ plastic box .....	\$14.50
C-5 Data Cassette w/box .....	\$ 2.49
Disk Fix and Cleaning Kit .....	\$29.00

## DEMONS DUNGEON \$19.00

Queen Isadore's crown was stolen by the Demons that live in the deep terrifying dungeon. If the crown is not recovered the magic that protects her and the kingdom will vanish. Others have tried and died. Whoever recovers the crown and saves the kingdom will win the hand of the princess Ilana and the Kingdom.

## THE PROGRAMMERS WORKSHOP

24686 REDLANDS BLVD. • SAN BERNARDINO, CA 92406  
OUTSIDE OF CALIFORNIA (800) 228-6821  
CALIFORNIA (714) 796-6821

TO ORDER: VISA/MASTERCARD, Check or Money Order accepted. If charge, please include expiration date. Shipping and Handling - Software \$1.50 - Disk Drives \$10.00. California residents add sales tax. Phone or mail.



# Atari in Lights

*Theater  
lighting designer's  
Atari C.A.D.*

by MICHAEL CIRAOLLO,  
Antic Associate Editor

**J**ames Brentano is the stage lighting designer and lecturer for the Drama Department of U.C. Berkeley. He has also been a dedicated Atari hacker since he bought his 800 back in the days when it cost \$800.

When you think about it, designing the lighting for a theatrical production is a highly information-intensive task. You have to combine dozens of color filters, lights, cables and dimmers in order to get the job done.

"A typical show will require 150-200 lights. For each light you must keep track of the following—name or label, any one of several hundred colors, circuit which plugs the unit into the control board, a dimmer switch and stage focus spot where the light is aimed. Also each light unit will have different level settings for up to 200 cues," Brentano said.

Designing the lighting for a show traditionally requires extensive drafting of diagrams and long lists of each light's location, focus and so on. For each show, lights, cables and other material also have to be ordered—more paperwork.

Brentano now uses his Atari to handle the entire process. He wrote a BASIC routine to draw the lighting characters in Graphic 8, and uses **Graphics Master** software to produce a design layout template.

He also uses **SynFile+** to keep track of lighting information which can be sorted—by focus, type of light, etc.



## COMPUTER AIDED DESIGN

Brentano isn't content to simply turn the paperwork over to his Atari. He's planning to unite his lighting programs and utilities in one system, a computer aided design (CAD) package for the Atari.

"Nobody has yet developed a system where you're simultaneously hooked into the stage cues and all the lighting unit information," Brentano said.

"For the price of two IBM graphics boards and a whistle, I can produce a package with an Atari, dot-matrix printer, disk drives and the software to do *all* the CAD lighting work," Brentano figured. All for around \$1,000.

"Ideally you'd have onscreen a picture of the lighting diagram, and you'd use a light pen or mouse to circle and call up all the information on given unit."

After producing a package to do CAD lighting design, the next step is direct computer control of the lighting board. "The technology of light board computers is primitive—the interface to all the knobs and controls is expensive," the designer explained.

The light board Brentano uses at U.C. Berkeley costs \$37,000, not including the dimmers. "That's ridiculous when an Atari costs \$120," Brentano said.

### "LET'S MAKE A SHOW"

"It's surprising how many stagehands



LINDA TAPSCOTT

own Ataris—they like to play games. And we all play this game together. 'Let's go make a show'. Backstage crafts simply offer bigger and more expensive toys."

Brentano maintains that the Atari appeals to stagehands because of the machine's game tradition and because it's not hard to get inside the computer and play with it.

"You can do a lot of this design with the Macintosh and FileVision," Brentano admitted. FileVision is a visual database which lets you design icons that can be moved around the screen. Each icon also represents detailed information, such as the focus, location and type of each light.

"But Apple has a certain snobbishness I object to," said Brentano, who

believes that the Atari is the best 8-bit machine on the market. "Pong is the greatest thing since sliced bread."

## LIGHTING BOARD

Brentano's dedication to the Atari has made it the computer of choice for a theatrical bulletin board he's starting.

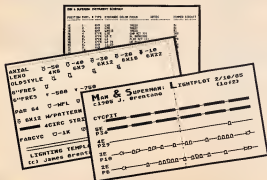
Based on an Atari 800, an MPP 1000C modem and two disk drives, Brentano's bulletin board will cater to the theatrical lighting community. It will have classified ads for jobs, equipment and so on. The board will also feature electronic mail, hints and tips for lighting designers, product reviews and comments.

"Eventually, I want to be able to dump a show's files to the bulletin board, so rental companies can log on, look at the file, and give me a price."

"A problem with theater is that we spend \$10–20,000 per show. Any way to share information saves money," Brentano said. "There's a need for a clearinghouse of information."

Brentano's board will be the only Atari theater BBS in the country—and only the second theater board of any kind. It is called JCN (James' Computer Network). The phone number is (415) 562-3364.

"JCN—it's like HAL in '2001' HAL was from one letter before IBM. JCN is one letter after."



The map and key above are used to tell theater electricians where to hang certain lights, what kinds of lights to use, and what focus each light requires.

## You have already made your first mistake!

You thought that cassette recorder would handle your storage needs.

**WRONG!**

## Don't make another one!

You think you need a disk drive to solve your storage problems.

**WRONG!**

## You need 2 disk drives!

Any serious application practically demands at least 2 drives.

*Word Processing*

*Spreadsheet*

*Data Base Management*

*Mailing List Software*

All of these are made more powerful and, at the same time, easier to use if you have two disk drives.

So now it will cost twice as much, right?

**WRONG!**

You need an Astra single or double density dual disk drive. Two drives in one low-priced unit.

**Astra Systems now has two new models for your ATARI:**



### **ASTRA 2001**

Single or Double Density Disk Drive

- Advanced Circuitry
- Rotary Doors
- Direct Drive Motors
- 360 Kbytes
- Reliable, Quiet Operation
- Fast Read/Write
- Easy Data Read

### **ASTRA "BIG D"**

- Double Sided Drives
- Single or Double Density
- Direct Drive Motors
- 720 Kbytes

ALL DRIVES FURNISHED WITH SMARTDOS OR MYDOS \*

\*DOUBLE SIDED DRIVES

For nearest dealer or distributor call  
**(714) 549-2141**

**\*ASTRA SYSTEMS, INC.**

2500 South Fairview, Unit L  
Santa Ana, California 92704

difficult for professional programmers to work with.

Despite this, Wetmore was positive enough about GEM that he bought the Seminar disks and intends to invest over \$4,500 for a souped-up IBM PC to run Lattice C. "But right now any GEM programs I publish will just be for the Atari," he said, "because it's the only computer that a developer won't be charged royalties for by DRI when the software comes out." **A**

#### TURTLE PIANO continued from page 10

As stated earlier, this program is really pretty simple. Readers are encouraged to make it more special. With a little tinkering, Turtle Piano could flash different colors with each note, extend for another octave or two, or include sharps and flats. The basic structure can accommodate all these changes and more. The only rule is to share your ideas by sending them to Antic.

*Craig McBain is a third grade teacher in Mt. Clemens, Michigan. His wife wishes that Atari Logo had never been invented.*

Listing on page 74



#### THE #1 SYSPOP continued from page 8

from the Japanese game Go, and SIG "Atari has an oriental sound," said Luks, pronouncing the name quickly and sibilantly, as one monosyllabic word.

#### MILLION-DOLLAR SIGS

SIGs are now the second or third largest moneymaker for CompuServe, bringing in millions of dollars a year, Luks said. And he has a well-defined niche in that enterprise.

Luks, the "Godfather of SIG 'Atari',"

now works with a CompuServe sysop school and a test SIG where new SIG software is beta tested. He also helped launch the IBM SIG and works eight other boards besides SIG 'Atari—as well as being OnLine Editor of the Antic CompuServe Edition.

Of course, all that takes a lot of time, "60 to 70 hours a week," Luks figured. As we've found out at Antic when we try to get in touch with Luks, the phone at his Greenwich Village apartment routinely gives off a busy signal till after 3 a.m.

And during regular working hours, Luks is a freelance computer consultant to a major Wall Street brokerage firm.

"Nowhere else can you find a more knowledgeable group on the Atari world than on SIG 'Atari,'" Luks said. SIG 'Atari' members gave constructive input to Synapse Software during its development of the Syn Series. More recently they've done the same for Batteries Included's HomePak.

"Our users decide what service they get and dictate policy," Luks said. However, Luks insists that users maintain a sense of decorum on SIG 'Atari' and that the board not become a haven for pirates.

#### FREE ACCESS

Luks is committed to bringing the SIG to as many Atari users as possible. If a large users group has never been in SIG 'Atari' before, Luks said he would try to arrange free access to the SIG for a weekend so the group could discover the magic for themselves.

"If we could get a new machine from Atari, we could have 50-60 public domain programs for the ST on the SIG 'Atari,'" Luks claimed. Nor does it appear an idle boast. "On the Macintosh SIG, we had 50 programs when there were only five for sale in the stores."

"All they have to do is ship it. We'll do the rest," Luks promised.

Luks sees his demanding work with CompuServe as an investment in the future. "We're shaping the technology. Also I want to be able to live anywhere, to be geographically independent and able to work over the phone." **A**

## YOUR SOFTWARE RIGHTS



1. You, the Atari owner, have the right to expect a simple, easy-to-use filing system
2. You have the right to see your Atari perform to its fullest capabilities—using advanced graphics, color and sound.
3. You have the right to expect home productivity software that's easy, convenient and natural.

**AND YOU HAVE THE RIGHT TO YOUR SATISFACTION GUARANTEED OR YOUR MONEY BACK.**

**We hear you. That's why Antic is presenting you with Sparky Starks and Russ Wetmore's**

## HomeCard™

For \$24.95, HomeCard gives you an electronic filing box. Intelligent Relocater™ with automatic time or pulse dialing of up to 234 telephone numbers. Full search ability with the speed of a RAMDISK. And the natural convenience of index cards.



**By the author of HomePak.™**

HomeCard allows you to:

- chain any number of cards together
- store up to 234 cards in each box (one disk)
- create up to 8 major categories and effortlessly search any combination of those groups
- use any 1030 or Hayes-compatible modem or TV speaker to audial

**Ideal for home and student applications.**

Arcade #RW100 \$24.95+shipping & handling

ORDER NOW reference #RW100

Use the order form in the Arcade catalog.

Credit card orders

call 800-227-1617 (ext. 133)

In Calif. 800-772-3545 (ext. 133)

Exclusively from Antic.

Requires 48K and disk drive.

# ATARI® 820 or 822 PRINTER - \$39.00

With Cable and Paper *Everything you Need!*

## DISK DRIVES

- New Special Edition  
\$199.00 or \$349.00 w/Happy
- Reconditioned ATARI® 810  
\$149.00 or \$299.00 w/Happy
- Happy® Compatible
- 100% Software Compatible
- 120 Day Warranty
- Most Durable & Serviceable



MADE FROM ATARI® 810 BOARDS  
AND TANDON® MECHANISMS

## 410 PROGRAM RECORDERS CASSETTE - \$29.00

- Star Raiders
- Touch Typing
- States & Capitals
- Missile Command
- Time Wise
- 2 More Games

All for \$19.95

## 800 Computer Boards Complete & Tested

- Mother Board
- Power Board
- ROM Board
- CPU Board
- Ram Board

All for \$39.00

- Numeric Keypads w/driver \$19.95
- Disks from \$1.00 each
- LJK® LETTER PERFECT or DATA PERFECT

Everything for the ATARI Systems to Parts

San Jose Computer  
1844 Almaden, Rd. Unit E  
San Jose, CA 95125  
(408) 723-2025

## YOU CAN'T TELL A DISK DRIVE BY ITS COVER!!



WITH A **HAPPY ENHANCEMENT** INSTALLED THESE ARE  
THE MOST POWERFUL DISK DRIVES FOR YOUR ATARI COMPUTER  
WARP SPEED SOFTWARE DISK READING AND WRITING 500% FASTER

**HAPPY BACKUP** — Easy to use backup of even the most heavily protected disks

**HAPPY COMPACTOR** — Combines 8 disks into 1 disk with a menu

**WARP SPEED DOS** — Improved Atari DOS 2.05 with WARP SPEED reading & writing

**SECTOR COPIER** — Whole disk read, write and verify in 105 seconds

**1050 ENHANCEMENT** — Supports single, 1050 double, and true double density

**810 ENHANCEMENT** — Supports single density

**SPECIAL SUGGESTED RETAIL PRICE:** Get the **HAPPY ENHANCEMENT** 810 or 1050 version with the **HAPPY BACKUP** PROGRAM, plus the multi drive **HAPPY BACKUP** PROGRAM, plus the **HAPPY COMPACTOR** PROGRAM, plus the **HAPPY DRIVE DOS**, plus the **HAPPY SECTOR COPY**, all with **WARP DRIVE SPEED**. Including our diagnostic, a \$350.00 value for only \$249.95, for a limited time only! Price includes shipping by air mail to U.S.A. and Canada. Foreign orders add \$10.00 and send an international money order payable through a U.S.A. bank. California orders add \$16.25 state sales tax. Cashiers check or money order for immediate shipment from stock. Personal checks require 2-3 weeks to clear. Cash COD available by phone order and charges will be added. No credit card orders accepted. **ENHANCEMENTS** for other ATARI compatible drives coming soon, call for information. Specify 1050 or 810 **ENHANCEMENT**, all 1050s use the same **ENHANCEMENT**. Please specify -H model for all 810 disk drives purchased new after February 1982, call for help in 810 **ENHANCEMENT** model selection. Dealers now throughout the world, call for the number of the dealer closest to you.

ATARI is a registered trademark of Atari Computer Inc.

**HAPPY COMPUTERS, INC.** • P. O. Box 1268 • Morgan Hill, California 95037 • (408) 779-3830



# Color Palette

*Let your joystick select program hues!*

by JOHN FELTON

*Take the tedium out of program color selection with this joystick-driven BASIC utility. Color Palette runs on all Atari computers of any memory size. Disk or cassette.*

**W**hen the time comes to select colors for your new program, it's *hard* to choose among all the Atari's 128 colors and multiple luminances—if you can't conveniently compare similar shades. Until now, it was a tedious process to find the perfect green for your slime monsters, or just the right red for the sky over Barsroom. You might use SETCOLOR in a program, run it, look at it, break it, adjust it and start over again.

## USING PALETTE

Color Palette gives you a better way to use the best home graphics computer on the market.

Type in Listing 1, check it with TYPO II, SAVE a copy, and RUN the program. You'll be looking at a joystick-driven utility for color selection. Listing 2 is the source code for the assembly language routines used in the BASIC program. You don't need to type it in.

The palette's screen is divided into two windows. In the top, you'll see 12 patches of color, each with its hue and luminance numbers and a color register value. The lower right corner is the background color.

The bottom half modifies the color of patches in the top half. Put the cursor over the patch you wish to

modify and press the joystick button. You'll now be able to change colors by moving the stick up and down, and change luminance by moving the stick from side to side. Press the trigger to set that color and move on. To see your values, watch the X in the lower window.

That's all that there is to it. You might note that the top four patches are initialized to the Atari default colors. It is amazing how many programs use these four colors just because it's easier than looking for better ones. Well, no more.

*A three-year veteran of the Atari, John Felton is a computer science major at Cal Poly in San Luis Obispo, California.*

Listing on page 64



# COLOR *the* COVER— CONTEST

By JACK POWELL and MICHAEL CIRAOLO



When we invited submissions for our Color the Cover Contest, we didn't really expect a winner with the diligence, creativity and . . . uh . . . compulsiveness of **Paul Sedgewick**. His adaptation of the January 1985 *Antic* cover was artistically a match for any other entry—but it was also a mind-boggling technological tour de force.

The 23-year-old electrical engineer from Northridge, California spends his days producing delicate military microwave machines. And he put in over 100 hours re-creating *Antic*'s cover with *redefined* characters on two scrolling screens.

Paul decided that the black and white *Antic* January cover needed at least five colors, if not more. He also didn't think one video screen was large enough.

Wanting the highest resolution possible, Paul chose *ANTIC* Mode 4, the only mode which offers both high resolution and five colors. (Mode 4 is a five-color text mode, counting the background.)

He then photocopied the cover, enlarged it and graphed it on a grid approximately 40 squares wide and 50 down—each block representing one mode 4 character.

Next he graphed the cover in even finer detail, dividing each block into a 4x8 pixel matrix.

## 34 CHARACTER SETS

Having done all this preliminary paperwork, Paul finally reached for his own trusty character set editor. Using the editor, Paul redefined each character block to match the cover. However, there are only 256 characters in a character set—just enough to draw three screen rows.

Rather than re-use characters for different portions of the picture, Paul used display list interrupts (DLI) to actually change character sets while the screen was being drawn. After each three rows of characters on screen, a different set was pointed to in memory.

Paul decided that five colors really weren't sufficient, so he used a vertical blank interrupt (VBI) to draw the picture twice, thus creating extra colors by superimposing the hues. Two overlapping hues of the same luminance created a third color; two hues of different luminances created a vibrating, flickering effect.

The VBI was also used for vertical fine scrolling between two screens, which meant the display list instructions had to be continually refigured.

What began as a simple Color the Cover Contest entry ended in a four-screen phantasmagoria. The VBI alternates between two screens, and the vertical scroll switches between two more. After 100 hours of work,

Paul had created the necessary 34 complete character sets. With an accompanying assembly language program, the entire binary load file occupied 316 disk sectors!

## ...AND RUNNERS-UP

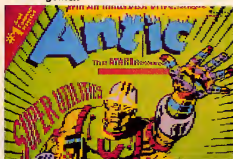
Nearly 150 readers mailed in entries to the contest. Just about half the entries used the KoalaPad or Atari Touch Tablet with accompanying *Micro Illustrator* (AtariArtist) software. Interestingly the second most used computer graphics tool was "Price's Picture Painter" the powerful program from *Antic*'s September, 1984 issue.

**Tim O'Connell**, of Mastic Beach, New York used a KoalaPad to produce his strong head-and-shoulders close-up of *Utility Man*. Our distinguished panel of judges (*Antic* editorial and art departments) particularly liked the way this U-Man seemed to be posing for a hero portrait.

**Alfred Gomez** of Las Cruces, New Mexico spent several sleepless nights to produce his entry. Gomez demonstrated his good taste by depicting a miniature *Antic* magazine hanging from *Utility Man*'s belt, although this is too small to see in our screen shot. Our judges were also pleased with the excellent use of contrast and color. His successful ef-

# and the winner is . . .

Paul Sedgewick



forts "burned my rendition into the retinas of my eyes." He was the only entrant to use the Fun with Art cartridge.

Montreal's **Gaston Aladin** used the Atari Touch Tablet and his own software to produce his highly impressionistic entry. Aladin's work demonstrates interesting, complex background textures captured in a fluid sense of movement.

**Nick Turner** was "inspired to go to the limit" of his patience in recreating our cover. This programmer from Mountain View, California used AtariArtist cartridge with Atari Touch Tablet to produce a Utility Man that closely resembled our cover. Turner displayed well-balanced colors, a good sense of proportions, and well defined shapes.



When she read about the Color the Cover Contest, **Marta Taylor** ran out and bought a KoalaPad to produce her entry, one of the more abstract renditions we saw. Taylor, who hails from Douglasville, Georgia, depicted Utility Man surrounded by a fanciful collection of balloons. While not a true copy of the cover, the entry contains unique imagination and a charming, simplistic innocence.

continued on page 34



Gaston Aladin



Runner-up winners are not presented in any particular order on these pages. Color The Cover Contest first prize is an Indus GT disk drive. Runner-ups receive their choice of any single item in the Antic Arcade Catalog.

Antic Disk subscribers: You will find the winning contest entry as a bonus on your August disk NEXT month. It was too large to fit anywhere on the current issue's two-sided disk.



Alfred Gomez

## runners-up . . .

Tim O'Connell



Nick Turner



Marta Taylor







# PRINT SHOP



## WELL WORTH THE WAIT!

by JACK POWELL, Antic Technical Editor

**Y**up. Looks like the dry spell for Atari software has finally ended. At last, the big guns are coming out: EPYX is marketing the fabulous Lucasfilm games, Paper-Clip is on the way, and Alternate Realities will finally become a reality—courtesy of Datsoft.

Then just the other day a bright yellow box came in from Broderbund. The Atari edition of **Print Shop** had finally arrived!

Print Shop is a graphics printing program that Apple owners have been enjoying for quite a while. It's currently Broderbund's hottest selling item, and the reason why is easy to see. From the bright yellow packaging to the foolproof programming, Print Shop is so darn friendly you feel like Bambi has just toddled into your Atari.

When the package arrived, we tore off the wrapping and booted the disk. The very first page of the reference

manual said to ignore the documentation, start up the program and just follow the prompts. Within minutes, the Antic offices were littered with gaily decorated printer paper.

If you've ever dreamed of being an art director, Print Shop is exactly what you've been waiting for. You'll be cranking out flashy greeting cards, stationery, banners and signs, featuring clever graphics and a variety of different type-styles. You can decorate with ready-made graphics icons that are supplied, or design your own. (My own "Opus The Penguin" has been very well received.) The results are remarkably professional.

The program is entirely menu-driven and leads the user easily through the options. In the tradition of all Broderbund's Apple-oriented programs, there is an almost complete lack of sound, but this is essentially a utility so it's not too bothersome.

Before you rush out and buy Print

Shop, make sure you have a dot-matrix printer capable of graphics. No matter how nice the program, it won't work on your letter-quality Atari 1027 printer. Print Shop handles most graphics printers. They're all listed on the box. If in doubt, call Broderbund.

As fun as it is, Print Shop has its limitations. You've eight type-fonts to choose from and there's no way to design your own. The disk comes with 60 icons or graphic designs. And you may also design your own using the Print Shop graphics editor, but as usual with multiple utility packages, the graphics editor is a crude joystick/Koala Pad pixel editor which does not allow for patterned fills or other desirable sophistications.

It would certainly be nice if we could use one of the many versions of Micro Illustrator to design our icons, but this is not the case. And, since the disk files have been hidden,

*continued on page 28*

# FANTASTIC PRINTER

## \$24<sup>95</sup> SALE!! \$24<sup>95</sup>

**Commodore 64 — VIC 20 — Atari**

- ☆ 40 And 80 Column Printers ☆ Up To 100 Characters Per Second ☆ Full Graphics Capability  
 ☆ Upper And Lower Case ☆ Advanced Thermal Technology For Quiet Operation



### 3100 Alphacom 42-80 CPS 40 Column Printer

Print out listings with full computer character sets (interface required, see below). Print in upper and lower case. Comes with a roll of paper and all power adapters needed. Perfect for a spare printer or program lister. List \$99.00. **Sale \$24.95.**

### 40 Column Extra Paper

	LIST	SALE
3103 25 Meter Rolls Blue	\$9.95	<b>\$3.00</b>
3104 40 Meter Rolls Blue	\$16.95	<b>\$3.95</b>
3105 25 Meter Rolls Black (1 per pkg.)	\$12.95	<b>\$3.95</b>
3106 25 Meter Rolls Blue (2 per pkg.)	\$19.95	<b>\$5.95</b>
3107 25 Meter Rolls Black (2 per pkg.)	\$19.95	<b>\$5.95</b>

### 3150 Alphacom 81-100 CPS 80 Column Printer

Now you can have a printer for the cost of a large box of paper. This printer prints in upper and lower case with true lower descenders. Comes with 1 roll of paper and power adapter. With the intelligent interfaces (sold below) you can do Ascii graphics as well as Atari or Commodore graphics. Plus you can do underlining and expanded modes. Print out pictures, program listings, word processing pages, etc. Perfect for the student or homeowner. List \$199.00. **Sale \$39.95.**

### 80 Column Extra Paper

	LIST	SALE
3153 40 Meter Rolls Blue	\$14.95	<b>\$3.95</b>
3154 40 Meter Rolls Black	\$19.95	<b>\$4.95</b>
3155 25 Meter Rolls Blue (2 per pkg.)	\$19.95	<b>\$7.95</b>
3156 25 Meter Rolls Black (2 per pkg.)	\$19.95	<b>\$8.95</b>

**3101 Intelligent Commodore Interface** — Allows you to hook the 40 or 80 column printer to the Commodore 64, do program listings, allows software screen dumps, etc. Includes Commodore graphics and reverse characters. (Specify 40 or 80 Column) List \$59.95.

**40 Column Sale \$9.95.**

**80 Column Sale \$14.95.**



**3102 Intelligent Atari Interface** — Allows you to hook the 40 or 80 column printer to the Atari computer, do program listings, allows software screen dumps, etc. Includes Atari graphics and reverse characters. (Specify 40 or 80 Column) List \$59.95.

**40 Column Sale \$9.95.**

**80 Column Sale \$14.95.**

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA. APO FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders. 1 day express mail! VISA — MASTER CARD — C.O.D. No C.O.D. to Canada. APO/FPO

## PROTECTO

*We Love Our Customers*

Box 550, Barrington, Illinois 60010

**312/382-5244 to order** Dept. ANI/6



*Lowest Price In The USA!*

# ATARI® Computer System Sale

• Students • Word Processing • Home • Business

**\$449**

EDUCATE WITH ATARI



**Rated "Best Buy" by Consumers Digest Buyers Guide, January 1985**

LOOK AT ALL YOU GET FOR ONLY **\$449**  
SYSTEM PRICE

- ① Atari 800XL 64K Computer
- ② Atari 1050 127K Disk Drive
- ③ Atari 1027 Letter Quality 20 CPS Printer
- Atari Writer Word Processor
- Atari BASIC Tutorial Manual

All connecting cables & T.V. interface included.  
\* Monitors sold separately.

LIST PRICE	INDIVIDUAL SALE PRICE
\$299.00	\$109 <sup>00</sup>
399.00	189 <sup>00</sup>
399.00	199 <sup>00</sup>
79.95	39 <sup>95</sup>
16.95	12 <sup>95</sup>

**SAVE \$100**  
ALL 5 ONLY  
**\$449<sup>00</sup>**  
SYSTEM  
SALE PRICE

**TOTALS**

**\$1193.90 \$549.90**

## MONITOR OPTIONS:

- ☆ 12" Hi Resolution Green or Amber Screen
- ☆ 13" Hi Resolution Color

List	Sale	Add \$9.95 for Connection Cables and \$10 for UPS
\$199.00	<b>99.00</b>	
\$399.00	<b>195.00</b>	

**15 DAY FREE TRIAL.** We give you 15 days to try out this ATARI COMPUTER SYSTEM!! If it doesn't meet your expectations, just send it back to us prepaid and we will refund your purchase price!!

**90 DAY IMMEDIATE REPLACEMENT WARRANTY.** If any of the ATARI COMPUTER SYSTEM equipment or programs fail due to faulty workmanship or material within 90 days of purchase we will replace it IMMEDIATELY with no service charge!!

**Best Prices • Over 1000 Programs and 500 Accessories Available • Best Service**  
**• One Day Express Mail • Programming Knowledge • Technical Support**

Add \$25.00 for shipping and handling!! Dept. AH1/8  
Enclose Cashiers Check, Money Order or Personal Check  
Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day  
express mail! We accept Visa and MasterCard. We ship  
C.O.D. to continental U.S. addresses only.

## COMPUTER DIRECT

*We Love Our Customers*  
Box 1001, Barrington, Ill. 60010  
**312/382-5050 to order**

**PRINT SHOP**  
continued from Page 25

a programming hobbyist would have a difficult time writing a conversion program.

One frustrating omission is Print Shop's inability to make labels. What about all my home-made peach preserves and canned prunes?

Nevertheless, Print Shop is the kind of program that should appeal to a huge audience. I can't think of a better computer gift for children—if the adults will let them get their hands on it. We really should all thank Broderbund for converting this hit software to the Atari. Now if they would only buckle down and get to work on an

Atari conversion of Championship Lode Runner. . .

**PRINT SHOP**  
Broderbund Software  
17 Paul Drive  
San Rafael, CA 94903  
(415) 479-1170  
\$44.95—48K disk



# Monkey Wrench II

for the ATARI 800 or XL



Cut your programming time from hours to seconds, and have 33 direct mode commands and functions. All at your fingertips and all made easy by the MONKEY WRENCH II.

The MONKEY WRENCH II plugs easily into the cartridge slot of your ATARI and works with the ATARI BASIC.

Order your MONKEY WRENCH II today and enjoy the convenience of these 33 features:

- Line numbering
- Renumbering basic line numbers
- Deletion of line numbers
- Variable and current value display
- Location of every string occurrence
- String exchange
- Move lines
- Copy lines
- Up and down scrolling of basic programs
- Special line formats and page numbering
- Disk directory display
- Margins change
- Home key functions
- Cursor exchange
- Uppercase lock
- Hex conversion
- Decimal conversion
- Machine language monitor
- DOS functions
- Function keys

The MONKEY WRENCH II also contains a machine language monitor with 16 commands that can be used to interact with the powerful features of the 6502 microprocessor.

**\$29.95**

# Have You KISSED Your Atari Lately?

Introducing "KISS", a new, simpler, more powerful Word Formatter/Processor for your Atari 800, 600XL, and 800XL.

"KISS" comes in a cartridge, and is designed for the occasional user, yet simple enough for beginners and children. It comes with an easy to read manual, that contains example text files. Check out these other "KISS" features:

- Input of text is via standard ATARI screen editor - so there is nothing new to learn
- Only 13 commands to process text
- Text can be sent to screen or printer
- Single page or fan-folded paper can be used by printer
- Prints English error messages
- The "KISS" cartridge does not have to be installed in order to input text information
- Automatic page numbering on output
- Text can be justified to both the left and right margins
- Can be used for letters, reports, term papers, etc.

# KISS

Call us today for your "KISS" Only \$19.95

3239 Linda Dr.  
Winston-Salem, N.C. 27106  
(919) 748-8466  
Send for free catalog!

VISA

MasterCard

# Eastern House

# Color Inkle Loom

*Your Atari master weaver*

by GERALD M. HAGOPIAN

*Design intricate 39-thread weaving patterns for the inkle loom with this BASIC program. (If you're a weaver, inkle loom won't sound strange.) Color Inkle Loom works on all Atari computers with 24K memory. 24K cassette, 32K disk*

Serious weavers regularly face the process of selecting colors and patterns for their various looms. And as you know, displaying intricate color patterns is a job that's duck soup for the Atari. With the Color Inkle Loom program, you can design patterns for use with the inkle loom which—in weaver's jargon—is a two-harness plain weave loom.

This program should be a good start for Antic readers who might wish to develop design software for looms that are more complicated than the widely used inkle.

## ATARI WEAVING

Type in Listing 1 and check it with TYPO II. SAVE it before you RUN it.

After the opening screen, you'll see a menu. You can choose to Create a new weaving, Save a weaving, Load

a previous weaving, or Exit the program.

If you are creating a new weaving, you'll be asked for the number of threads per harness, up to 39 each. After typing a number, you'll be asked if you're sure. Type [Y] to continue, anything else to go back.

Then choose colors, starting with harness #1, thread #1, followed by harness #1, thread #2, and so on. In each case, you'll be asked for the color or letter—which you'll take from the marked band of colors across the screen. Once again, you'll be asked if you're sure. Type [Y] to continue, anything else to go back.

When you're done choosing colors, you'll be asked if you're ready to weave. Type [Y] to continue. You can start weaving, or change the intensity of the colors you've chosen. With the spectrum band's range of 16 colors, and the Change Color Value option, you can produce any of the Atari's colors.

*Gerald M. Hagopian is a freelance consulting designer working with consumer products and interior design.*

Listing on page 60



# Play it Again, Atari!

*They laughed when I sat down at the 800 XL...*

by NAT FRIEDLAND, *Antic* Editor

Okay, I confess. Before I settled on writing I was a committed would-be musician. As a kid and teenager I must have spent hundreds of hours teaching myself piano, rhythm guitar and chromatic harmonica. I played first trombone in the high school band, thus becoming automatically eligible for a music scholarship to state teachers college if I had wished to go.

It was relatively easy for me to pick up the rudiments of playing different instruments. But there would always come a time—much too soon—when I ran into the upper limits of my musical coordination. I could never seem to really master any instrument.

I used to daydream about some kind of future electronic musical instrument coming along that would automate things the things I couldn't get my fingers to do and let me express my musical ideas without being an instrumental whiz. Little did I know those instruments would become a reality—even an affordable reality—in less than two decades.

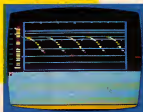
Recently my musical frustrations have been much more localized. It seemed as if all the good musical software and plug-in computer pianos—keys from companies like Sequential Circuits or Passport were being made only for the Apple II or the Commodore 64.

## 1985 ATARI MUSIC

However, in 1985 all this has changed. Some truly phenomenal new musical peripherals for our favorite personal computer are about to make the Atari the new champion of computer-assisted musicking.

In this article you will read about:

- A new kind of "music generator" software that lets you compose and improvise in real-time at the Atari keyboard. The four-voice sound is tracked by colorful geometric graphics. Press a couple of Atari keys and you'll feel like the next Brian Eno.
- A software and "black-box" product that lets your Atari emulate an advanced 16-track digital recording studio.
- A remarkably powerful new MIDI synthesizer that sells for no more than what an Atari disk drive used to cost.



VIRTUOSCO screen.

kids were taking two-hour lessons in creating music on the Virtuosco sound generator and when the sessions were over their parents often had to drag them away from the machines.

Virtuosco is such a unique new approach to musicking that it's not easy to describe. It's one of the closest things in the real world to the multi-arts competitions that Herman Hesse wrote about in his classic literary fantasy *The Glass Bead Game*. In that book, Hesse wrote about chess-like contests where one player's move might be a theme from a symphony and the opponent's countermove could be a line of a poem or a section of a painting. . . .

Virtuosco gives you a user-friendly method of tapping the extremely fast and powerful changes that a computer can control in every aspect of music performance. It bypasses the limits of traditional musical notation

## 1. VIRTUOSCO

At a music studio in Queens, New York last year you'd find three kids at a time sitting in front of Atari computers and listening on earphones while geometric patterns of color flashed across the video screen. These



MIDITRACK II

and uses an almost self-explanatory color graphic display that delivers mathematical insights into the structure of music.

## USING VIRTUOSO

You'd enter a musical pattern into Virtuoso from the Atari keyboard, or call up one from about 480 that could be stored on a single disk. The pattern would start sounding and the lines of colors would trace it visually. At this point you could start creating all sorts of changes in the pattern—which you would hear and see *immediately*.

As the pattern was playing, you could change its speed, rhythm, pitch, tone, volume, key scale, etc. You could enter new patterns any time. There's even a Future mode where you can enter changes before they are due to be played. The effect of controlling so much musical power so effortlessly feels something like conducting an orchestra at the same time as you are composing the music that it plays.

In technical terms, Virtuoso is a sound generator that produces four voices from the POKEY chip. You can make instant real-time changes in the voices in any of six parameters. Four computers running Virtuoso can be linked together to have up to 16 independent channels controlled by one Atari.

As a sound editor, Virtuoso can synthesize multiple voices with 1/60 of a second accuracy and tune them within 10 steps of intonation. Any musical passage can be moved anywhere, saved, and replayed in any key and in virtually any rhythm.

## COMING SOON

This groundbreaking product is a collaboration between former Julliard Music Professor Joseph Lyons and Frank Schwartz, a highly experienced programmer and electronics designer. Originally, Virtuoso was financed by Warner Leisure Software, who naturally wanted it for the Atari and in cartridge form.

After Warner Software shut its doors last year, Schwartz and Lyons obtained new funding and are hoping to have Virtuoso on the market by August. At this point, Virtuoso is to be on disk, available for either the Atari or Commodore 64, and priced at about \$50.

Not only that, a \$150 MIDI interface for Virtuoso is also being readied for August release. Virtuoso will therefore be usable as a visual language for MIDI controllers—not only for music, but also for lighting and sound effects, lasers, etc. Once again, shades of Hesse's *The Glass Bead Game*.

Lyons and Schwartz are as enthusiastic about the Casio CZ-101 synthesizer as Antic is, and Virtuoso will definitely run on this outstanding electronic instrument—which will provide even greater power, versatility, sound quality and handling ease than the Atari POKEY chip.

**PLEASE NOTE** that Virtuoso is a product that is still under development and has not yet been released at this writing. Antic will print more news of Virtuoso as soon as it becomes available, so please do not phone or write us asking where to get it yet.

How does Antic know that Virtuoso is for real? There are two reasons. 1. We have heard (and seen) Joe Lyons play four-part Bach Fugues on it. 2. Antic has a first-generation Virtuoso cartridge that Frank Schwartz gave us.

Our prototype Virtuoso cartridge is packed solid with microchips and actually a plug-in board. Its music generating functions are 100% in working order, but figuring out how to play it from only the skimpy documentation notes is not too easy. At present you'd need Lyons standing over your shoulder to explain things, the way he does in his studio lessons.

That's why the final development work is concentrated on making Virtuoso even friendlier to operate. There will be icon menus, an inexpensive membrane keyboard for musical input (if you're not using a MIDI instrument), and six levels of complexity that will gradually take you from beginner to expert status.

## 2. MIDITRACK II

MIDITRACK II has been wowing them at computer shows and musical instrument shows since last fall. It's available at various professional-music stores around the country or by mail from the manufacturer for \$349. (Detailed manufacturer information will be found at the end of the article.)

Interestingly, your Atari will be the least expensive component of this

continued on next page

music system. Bob Moore of Hybrid Arts, makers of MIDITRACK II, gives a slightly surprising reason why the Atari was chosen to drive the system. "The Atari is the sturdiest of the inexpensive lightweight computers," he said. "We believed it would have the best chance to survive a long professional road tour."

MIDITRACK II disk software and the included MIDIMATE interface box work with any Atari that has 48K memory. The Atari itself does not produce any sounds with its POKEY chip here. It simply acts as the controller for up to 16 channels of information transmitted by MIDI instruments.

## WHAT'S MIDI

MIDI stands for Musical Instrument Digital Interface. It's a set of electronic standards—just as ASCII, RS-232 and Parallel Centronics are standards—that allows electronic musical instruments to coordinate and exchange digitally encoded sound information.

Moore, who was primarily a Hollywood studio musician before coming up with the idea for MIDITRACK II, said, "If you've already got an Atari and disk drive, it should cost you no more than \$3,000 to have a fully professional digital recording setup. (To just have fun with your Atari music system, you could get away with \$500 or less. More on this later.)

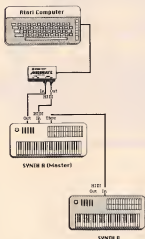
What you need for a fully professional system is a main synthesizer, a drum machine, and probably a second synthesizer to give you a bit more variety of sounds. The second synthesizer doesn't even need to have a keyboard because you can play it from the main synthesizer.

At the other extreme, you could theoretically daisy-chain huge gangs of MIDIMATES and electronic instruments. You could mix 16 completed tracks onto a single track, make 15 new tracks and mix everything down to track 2, and then repeat the process. You could run a symphony orchestra of synthesizers from a single Atari, even a stadium filled with synthesizers. . .

Normally the way you'd operate a MIDITRACK II system is something like this: First you'd set up a drum pat-

tern and record it on track 1. Next you'd adjust your synthesizer to sound like a bass and play an accompaniment onto track 2. With your "rhythm section" in place you could

Figure 1



A typical system hook up is shown in figure 1. Note that synth A is the master synth because both its MIDI IN and MIDI OUT are connected to the MIDIMATE interface box.

then start layering all sorts of interesting synthesized sounds on top to make melodies and harmonies in the rest of the available tracks.

## STUDIO IN A BOX

Once you were finished, you would have a fully edited arrangement for MIDI instruments which you could then record on tape for combination with vocals or non-MIDI instruments. The length of the music you could save would depend somewhat on how many notes were in the piece. The limit per file is 3,000 sequenced notes.

By the way, usually you can simultaneously call up more than one track from a single MIDI instrument. Many synthesizers could give you as much as 8 simultaneous tracks.

On the whole, the MIDITRACK II documentation is excellent. Once you have plugged everything in, the

manual suggests that you simply press your Atari spacebar, play something on your synthesizer, and then press the spacebar again. That's all it takes for a recording and playback!

One of our testers kept losing his music at first, every time he tried to save a track. But once he figured out that this was caused by holding down the Inverse Video key too long during the save command, there were no problems.

MIDITRACK II is designed to operate like a professional multitrack tape recorder. So it contains all the features you would normally expect to find in a recording studio. All 16 tracks are independent unless you mix them together. You can synchronize tracks or change the speed of the entire recording. You can overdub or transpose tracks. You can automatically locate any spot on the recording. You can "punch in" anywhere to record difficult passages one note at a time.

MIDITRACK II even supports the advanced technique of quantization, or autocorrect. For example, if your timing was a bit uneven when you were trying to play that flashy bass part you could set the notes to automatically come out on the beat.

## 3. CASIO CZ-101

Most Atari owners who buy MIDITRACK II will probably decide to use the new Casio CZ-101 synthesizer as their primary keyboard. That's because the CZ-101 sells for about one-fourth the price of any comparable synthesizer! It lists for \$499 but has been on sale at Macy's for as low as \$300.

The instruments that Bob Moore brought along to demonstrate MIDITRACK II were the Yamaha DX7 synthesizer which has a list price of \$1,995 and the Yamaha RXII drum machine which lists for \$895. Both of these instruments are very popular with professional musicians and are not considered unusually high-priced in comparison to the competition.

At the time, Moore told *Antic* that



a new low-priced but powerful synthesizer from Casio was due to be released shortly and it would apparently be at least somewhat comparable with the DX7. Well, the CZ-101 was shown at the Consumer Electronics Show and Casio kindly let us have one to use with our MIDITRACK II.

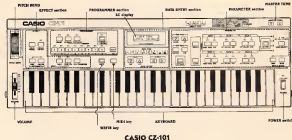
## ST OF SYNTHS

We swiftly discovered that the CZ-101 is considerably more than merely a stripped-down version of the DX7. In fact, this Casio could almost be considered the Atari ST of synthesizers—it delivers far more “power without the price” than anything else in its class. Despite the Casio brandname we are talking about a real synthesizer here, not an “electronic music-maker” with one-key chords and preset drum-bass patterns. (It doesn't have a built-in speaker either.)

has more waveforms, envelopes, oscillators and more ways to combine these soundmaking elements than most previous synthesizers.

multitrack compositions featuring your own synthesized sounds almost as soon as you've got your system cabled together.

Figure 3



In this instrument you'll find a full assortment of standard high-end synthesizer features such as pitch-bend wheel, ring modulator, portamento, octave shift, detune control, phase distortion sound generator.

And you can dramatically change the synthesizer voicings during playback and hear your new sounds in real time. Or if you tinker with the playback of the demonstration songs provided with MIDITRACK II you can try out sounds as unique as a Mozart Sonata being played on a vibraphone or jazz organ.

So tune up your Atari and unlock your creativity. With MIDITRACK II, the Casio CZ-101 and Virtuoso, you might very well be world's next musical genius!

## 16 INSTRUMENTS

The CZ-101 starts you off with 32 factory-preset sounds—flute, electric piano, violins, organ, etc.—that range from okay to pretty good. You can reprogram 16 of these sound “patches” to hold your own sound creations (you can bring back the factory patches anytime). Also there's a slot for additional 16-patch programmable cartridges.

People who play piano by ear and can only play in one key (usually either all white notes or all black notes) will deeply appreciate the transpose button that will instantly shift you into even the most complex key (four flats, five sharps, etc.).

The CZ-101 has 49 keys of standard “mini-keyboard” size. Purists may insist that only full-size keys will do, but personally I enjoy the feeling of spanning left-hand tenths as effortlessly as I would reach octaves on a full-size keyboard.

## A GREAT TEAM

The CZ-101 works in combination with MIDITRACK II remarkably effectively. You don't need to be a musical genius to record and playback flashy

## MANUFACTURERS

MIDITRACK II  
Hybrid Arts  
P.O. Box 480845  
Los Angeles, CA 90048  
(818) 508-7443  
\$349—48K disk

CZ-101 SYNTHESIZER  
Casio, Inc.  
15 Gardner Road  
Fairfield, NJ 07006  
(201) 575-7400  
\$499 (Suggested list)

VIRTUOSO  
Enhanced Technology Associates  
125 W. Duke Ellington Blvd.  
New York, NY 10025  
\$50—48K disk  
\$150—MIDI interface  
(Available August 1985 or later)



Figure 2

Fig 2 shows an example of an envelope using all 8 steps. In this example, there are two attacks before the Sustain Point as well as a third attack after releasing the keys. This shows how you even have the possibility of setting an “after-envelope”.

In many ways the CZ-101 is even more versatile than earlier, more costly synthesizers. A review in the March, 1985 issue of “Keyboard,” the top magazine for electronic keyboard players, concludes, “The CZ-101 makes good use of the latest digital technology. Its attractive features include seven excellent envelope generators, good-sounding waveforms, and several doubling modes for building up complex timbres. As an inexpensive and versatile MIDI slave module, it could be a very effective addition to almost any stack.”

Upon translation from synthesizer jargon, what this means is that the CZ-101's strongest point is its wide-ranging capability of creating and manipulating synthesized sounds. It



# POWER WITHOUT THE PRICE ATARI AT...COMPUTER CREATIONS



## ATARI HARDWARE

COMPUTERS	CALL FOR NEW PRICES	COMPUTERS
Atari 800 XL		Atari 130 ST
Atari 85 KE		Atari 620 ST
Atari 130 XE		
Atari 1050		Atari ST 324 (3 1/2" floppy disk 250K)
Inclus GT (Free Software)		Atari ST 354 (3 1/2" floppy disk 500K)
Atari 2001		Atari SH 317 (3 1/2" hard disk 10 MB)
Atari "Big D"		Happy Enhancement for Atari 810 and 1050 Drives

### DISK DRIVES

CALL FOR NEW PRICES	
Atari 5F 324 (3 1/2" floppy disk 250K)	
Atari 5F 354 (3 1/2" floppy disk 500K)	
Atari SH 317 (3 1/2" hard disk 10 MB)	
Happy Enhancement for Atari 810 and 1050 Drives	

### PRINTERS

Atari XTM 301 (Non-impact Dot Matrix 20 CPM)	
Atari XTC 201 (Color, non-impact Dot Matrix 20 CPM)	
Atari XDM 121 (Daisy Wheel Letter Quality 12 CPM)	
Atari XMM 201 (Dot Matrix, Impact 40 CPM)	
Atari 1045 (Dot Matrix, Impact CPS)	
Atari 1027 (Letter Quality)	
Atari ST 604 (Color Dot Matrix non-impact 60 CPM)	

### MONITORS

CALL FOR NEW PRICES	
Atari XE 141 (14" Composite Color)	
Atari XM 140 (12" Monochrome, 80 columns, high resolution)	
Atari SM 124 (12" Monochrome, 80 columns, high resolution)	
Atari SC 1234 (12" RGB Color)	
Sanyo 12" Green Screen	79
Sanyo 12" Amber Screen	79
Sanyo Color Screen, 13"	209
Sanyo 13" Green Screen	89
Monitor Color	7
Teknisk 13" Color MJ 10	209

### EPSON PRINTERS

EP-100 (80 columns)	Call For
EP-100 (136 columns)	Printer & Interface
EPSON FX-804 (80 columns)	Package
EPSON RX 100+ (136 col.)	

### STAR MICRONICS PRINTERS

SD-10 (80 columns)	CALL FOR PRICES
SD-15 (136 columns)	
SD-10 (30 columns)	
SD-15 (136 columns)	
SD-10 (80 columns)	
SD-15 (136 columns)	
SD-10	
Powertype Daisywheel	
Powertype Tractor Feed	

### PANASONIC PRINTERS

KX-1030	Call For Prices
KX-1031	
KX-1032	
LD-3151	
Okimate 10 plus plug in print	

### PRINTER INTERFACE CABLES

MPH-1150 Parallel Printer Interface	49
U-Print A	55
A-15 Interface/Buffer	49
APC Face XLP	49
APC Face 12XLP	75
Microbit Microbuffer	109

### PRINTER RIBBONS

German Printers (Black/Blue/Red/Purple/Green/Gray)	5
Canon Printers	8
Panasonic Printers, Black	13
Panasonic Printers, Color	10

## GENERIC DISKS AT FANTASTIC PRICES!

85/500 GENERIC DISKS AS LOW AS 99¢ ea.

Generic 100% Defect Free/Guaranteed.

Includes sleeves, labels, write protect tabs, reinforced hub rings, lifetime warranty (2 boxes minimum)

DISKETTES	55/500	DS/500
2 boxes	\$11.99	\$13.99
3 - 6 boxes	\$10.99	\$12.99
7 - 10 boxes	\$ 9.99	\$11.99

MORE THAN 10 BOXES...CALL!

\* DEALER INQUIRIES INVITED \*

## COMPLETE LINE OF ATARI SOFTWARE

SOFTWARE		INFOCOM	
Dragon's Lair of Pern (C)	26	Get Throats (C)	24
Swimmer Games	26	Describe (C)	32
Pistop II (C)	26	Envanter (C)	34
Balblazer (C)	26	Hitchhiker's Guide to the Galaxy (C)	24
Rescue on Fractalus (C)	26	Inheld (C)	24
Temple of Apeah (C)	25	Planetfall (C)	24
ACCESS		See Straker (C)	26
Beach Head (C)	24	Sonorous (C)	26
Beach Head II (C)	24	Starcross (C)	32
Raid Over Moscow (C)	26	Suspect (C)	32
ACTIVISION		Suspended (C)	32
Deathtrap (R)	21	Witness (C)	24
Hit II (R)	21	Zork (C)	24
Space Shuttle (R)	21	Zork II or III (C)	26
Ghost Busters (C)	21	Invader's Hot Books	7
AMERICAN EDUCATIONAL		MICROPHONE	
Spelling Grades 2 thru 8 (R)	15	P-15 Strike Eagle (C)	24
Reading Comprehension (R)	19	Mig Alley Ace (C)	24
BATTERIES INCLUDED		Solo Flight (C)	24
Paperclip (C)	59	OS	
Minicomp	35	Action (R)	65
Brigade	Call	Action Tool Kit (C)	26
BROOKSBURG Home Pak		Basic XL (R)	56
Protalisp (C)	32	DOS XL (R)	26
Splinter (C)	21	MAC/65 (R)	58
Strength (C)	21	MAC/65 Tool Kit (C)	26
Whistler's Brother (C)	21	Whistler's Tool Kit	58
CBS		ORIGIN	
Call for items and prices		Ultima II (C)	42
CONTINENTAL		SCARBOROUGH	
Home Accountant (C)	50	Madentype	26
DATASOFT		Net Worth	52
Bruce Lee	34	SIERRA ON LINE	
Chorus Quest	34	Ultima I	26
Conan	28	Ultima II	42
Letter Wizard w/printer	Call	SPINMAKER	
ELECTRONIC ARTS		Call for items and prices	
Archon (C)	29	SYNAPSE	
Pinball Construction (C)	29	Oakstone	18
N.U.C. (C)	29	Atty Cat	18
Maiden/Undermind (C)	29	Syn File +	36
One on One (C)	29	Syn-Gals	36
Archon II (C)	29	Syn-Trend	36
Musik Construction (C)	29	Syn-Conan	26
Rein/Impossibility (C)	29	Syn-Clock	36
Hard Hat Magic	26	Mindwheel	Call
AXIS Assassin	25	Enies	Call
Seven Cities of Gold	29	TRONIX	
Adventure Construction Set	29	S.A.M.	42
Cut and Paste	37	Chatterbox	26

To order call TOLL FREE

1-800-824-7506

ORDER LINE ONLY

COMPUTER CREATIONS, Inc.

P.O. Box 292467 - Dayton, Ohio 45429

For information call: (513) 294-2002 (Or to order in Ohio)

Order Lines Open 8:30 a.m. to 5:00 p.m. Mon-Fri, 10 a.m. to 4:00 p.m. Sat (Eastern Standard Time). Minimum \$10 per order. C.O.D. add \$3.00. Call for free number to verify prices and availability of product. Hardware requires additional freight charges. Software and accessories add \$3.00 shipping and handling in Continental United States. Actual freight will be charged outside U.S. to Canada, Alaska, Hawaii, Puerto Rico. Charge orders add 6% sales tax. Free shipping on prepaid cash orders with the Continental U.S. For minimum size of invoice and cashier's check, money order or direct bank transfer. Personal and company orders of \$500 or more ship 2 weeks to clear. Soft copy prices orders welcome. Due to lower prices, all sales are final. NO C/D R/T'S. All defective returns must have a return authorization number. Please call (513) 294-2002 to obtain an R/A or your return will not be accepted for replacement or repair.

No extra charge for MasterCard or Visa

# GUITAR TUTOR

*Learn and play guitar chords on your Atari*

by FRANK IMBURGIO and GRACE BARRY



*A program that diagrams and plays simulated guitar chords. The BASIC listing works on all Atari computers of any memory configuration.*

**M**y great new Program In The Works wasn't working at all. Rather than break my new 800XL, (which was a serious consideration at this point), I reached for my guitar. I played a song or two while staring at the screen, and the idea for Guitar Tutor was born. Why not create a program to generate, diagram, and play guitar chords: major, minor, seventh and minor seventh chord combinations?

To use the program, first type in the BASIC listing. Check it with TYPO, and save an extra copy as a backup.

A music background is not necessary to understand or play with "Tutor"! The first thing you will see is "Pick a note to build a chord on." Take your pick from the list given, A through G. Then you will be asked to pick a natural, flat, or sharp. After you do that, you can pick whether you want your chord to be a major, minor, seventh, or minor seventh.

Now the screen will diagram the chord for you! These are standard guitar chord diagrams used in music books. Vertical lines represent the six strings of the guitar. Horizontal strings represent the frets. Dots represent where you press your fingers. X's represent strings that are not strummed, and O's represent strings that are strummed "open", with no finger pressing on the string. If two dots are on the same fret, "bar" with your finger—press more than one string down with the flat of your finger.

If you press "S" at this point, you will hear the four individual tones which make up the chord you have chosen. To the right of the diagram you will see a vertical line of eight numbers, the eighth reading REST. By pressing a number from one through seven, you can put the chord on the screen into a "memory." Now press [P] and you can play your chords by

*continued on next page*

# Software Discounters of America

(A Peripherals, too!)

For Orders Only — 1-800-225-7638\*

Inquiries and PA 412-361-5291

- \*Free Shipping on orders over \$100 in continental USA
- No charge for VISA/MasterCard



<b>ACCESS</b>	Ream of	Spillies Ace (D)	\$19	Facemaker (R)	\$17
Beach House (D)	\$23	Impossibility (D)	\$23	Fraction Fever (R)	\$17
<b>ACTIVISION</b>		Seen Cities Gold (D)	\$27	Kids on Keys (R)	\$17
Death Patrol (R)	\$19	<b>EPIC</b>		Kidscamp (R)	\$17
Designer's Palace (R)	\$21	Dragonriders Pen (D)	\$27	Math Busters (D)	\$19
Ghostbusters (D)	\$19	Fun with (R)	\$19	Most Amazing	
Pinball II (R)	\$19	Gateway Alpha (R)	\$19	Thing (D)	\$19
Space Shuttle (R)	\$19	Jumpstart Jr. (R)	\$19	Sneaker Troops	\$19
<b>ARTWORK</b>		Pinball (R)	\$19	1 or 2 (D)	\$19
Bridge 4.0 (TorD)	\$19	Pinball II (D)	\$27	Story Machine (R)	\$17
Ghostbuster (D)	\$19	Puzzle Panic (D)	\$19	Trans (D)	\$19
Strip Poker (D)	\$21	Summer Games (D)	\$25	<b>SUBLOGIC</b>	
Female Disk Disk	\$16	*with the purchase of ea		Flight Simulator II (D)	\$33
Male Disk Disk	\$16	Eyes like mine live		Night Mission	\$21
<b>BIG FIVE</b>		your choice of		Pinball (D)	\$21
Bounty Bob's Adv (R)	\$23	Monster Make Plat		<b>SYNAPSE</b>	
Minor 2049 (R)	\$19	terman or Star War		Alley Cat (D)	\$17
<b>BRODERBUND</b>		nor please give Tel &		Black Max (TorD)	\$21
Archie Machine (D)	\$19			Blue Max 2001 (D)	\$21
Bank St. Winter (D)	\$43	<b>FISHER PRICE</b>		Dimension X (D)	\$21
Chopstick (D)	\$23	All Titles Available		Electronic Novels	\$21
Lodenamer (D)	\$23	<b>GAMSTAR</b>		Encounter (D)	\$17
Mask of Sun (D)	\$27	Star Book	\$21	Fi. Apocalypse (D)	\$21
Operation		Football (TorD)	\$21	Necromancer (D)	\$21
Print Shop (D)	\$27	Star League	\$21	Pharaoh's Curse (D)	\$21
Print Shop Paper		<b>NEWJ</b>		Quasmodor (D)	\$21
Relief	\$14	Computer SAT (D)	\$49	Shamus II (D)	\$21
Segment & Star (D)	\$27	<b>INFORM</b>		Sym Calc (D)	\$21
Spelunker (D)	\$21	Cut Throats (D)	\$23	Syn Chron (D)	\$21
Swash (D)	\$19	Deadline (D)	\$26	Syn Comm (D)	\$21
Writer's Brother (D)	\$19	Enchanter (D)	\$23	Syn File (D)	\$21
<b>CBBS</b>		Whodunnit's Guide to		Syn Shock (D)	\$21
Astro Grover (R)	\$23	the Galaxy (D)	\$23	Syn Trend (D)	\$21
Big Bad Spz Del (R)	\$21	Imadol (D)	\$27	<b>TIMEWORKS</b>	
Dr. Seuss Puzzle (D)	\$21	Imadol (D)	\$27	Data Manager (D)	\$17
Ernie's Magic		Imadol (D)	\$27	Electrons	\$17
Shogun (D)	\$17	Imadol (D)	\$27	Checkbook (D)	\$17
Match Word (D)	\$17	Imadol (D)	\$27	Money Manager (D)	\$17
Math Minigame (R)	\$17	Suspect (D)	\$27	<b>TRONIX</b>	
Success with Math		Call Suspended (D)	\$27	Pokémon (D)	\$17
Webster Word		Winlines (D)	\$23	S.A.M. (D)	\$26
Game (R)	\$19	Zork I (D)	\$23	<b>ACCESSORIES</b>	
<b>CONTINENTAL</b>		Zork II (D)	\$23	App Face Printer	\$49
Book of Adv Games	\$16	<b>KOALA</b>		Interface	\$49
Financial		Coloring Series I (D)	\$12	Astra 2001 Dual	\$27
Strategies (D)	\$39	Coloring Series II (D)	\$12	Disk Drive	\$27
Home Accountant (D)	\$44	Instant Programmers		BAF 93 DS	\$14 Bn
<b>DATASOFT</b>		Guide (D)	\$12	BAF 93 DS	\$19 Bn
Brude Lee (D)	\$23	Spider Eater (D)	\$12	CompuShare Starter	\$23
Conan (D)	\$23	Tablet with Pen (D)	\$27	Kit (\$ hrs)	\$23
Dallas Quest (D)	\$23	Tablet with Pen (R)	\$27	Digital Devices	\$23
Dig Dig (D)	\$19	* "See our display at m		Printer Buffers	\$23
LetterSpell		the case for lowest		Digital Devices	\$23
Wizard (D)	\$47	price ever		U Print A	\$59
Lord Tomb (D)	\$19	<b>LJK</b>		Disk Case Holds 50	\$9
Pac Man (D)	\$19	Disk Perfect (D)	\$49	Disk Case Holds 100	\$9
Pine Position (D)	\$19	Letter Choice (D)	\$49	Disk Drive Cleaner	\$9
Sands of Egypt (D)	\$19	<b>LEARNING COMPANY</b>		Full Stroke Replacement	\$9
Zaxxon (D)	\$19	Bubble Games (D)	\$23	Keyboard for	\$23
<b>DESIGNWARE</b>		Magic Spells (D)	\$23	Astron 400	\$49
Creature Creator (D)	\$19	Midpoint Hotel (D)	\$23	Genetic Disks	\$49
Math Maze (D)	\$23	Midpoint Parade (D)	\$23	Indus GT Disk Drive	\$23
Spellcrafter (D)	\$26	Word Spinner (D)	\$23	MPP 1000s Monitors	\$23
<b>ELECTRONIC ARTS</b>		<b>MICRO LEAGUE</b>		Modem	\$100
Archie (D)	\$27	<b>SPORTS</b>		Microbits, Microprint	\$49
Archie (D)	\$27	Micro League	\$23	Interface	\$49
Call & Paste W P (D)	\$35	Beauball (D)	\$27	MPP 1150 MicroBn	\$23
Financial		<b>MICROPROSE</b>		Printer Interface	\$59
Cookbook (D)	\$36	Art Rescue I (D)	\$21	Mosaic 32 48, 64K	\$41
Hard Hat Mack (D)	\$23	F 15 Strike Eagle (D)	\$21	Rata 1000 Disk Drive	\$19
Waste Construction		Wild Ace (D)	\$19	Sakata 15" Color	\$23
One On One (D)	\$27	Kennedy Approach (D)	\$23	Monitor Bevel	\$23
Pinball Construction		Set (D)	\$23	T-1 Stand	\$225
Set (D)	\$27	Neto Commander (D)	\$23	Wico Box	\$12
	\$27	Seto Flight (D)	\$23	Wico Bat Handle	\$19
	\$27	Delta Drawing (R)	\$17	Wico Three Way	\$23

P.O. Box 278 — Dept. AT • Wildwood, PA 15091

\*Ordering and Terms: Orders with cash or money order shipped immediately. Personal/company checks allow 3 weeks clearance. No C.O.D. • Shipping: Continental U.S.A. — Orders under \$100 add \$3 free shipping on orders over \$100. PA residents add 6% sales tax. AK, HI, PO-APG — add \$5 on all orders. International Order Policy: — No Credit Cards — add \$10 or 15% of order whichever is greater. Delivery method will be replaced with same merchandise — NO CREDITS! Return must have authorization number 412-361-5291. Prices subject to change without notice.

pressing the numbers you have assigned them. Play chords in any order and of any duration you want! Press [8] and you get no sound.

So as you see, you can also use Guitar Tutor to play a simple chord accompaniment if you feel like taking a break to sing a song while you're programming.

## GUITAR TUTOR VARIABLE LIST

### TOPS

### BOTS

### STRINGS

FRETS Graphic patterns to draw

box

PATTERN(20)—Array holds DATA

line numbers and is later used for sound numbers

K—value returned from keyboard  
X—GOSUB 600 returns with X as a DATA line number

TONIC—adjusted note (i.e., B<sup>♭</sup> reads data from C natural)

ACC—Accidental: 0 if natural, 1 if flat, 2 if sharp

CHORD—0 if major, 1 if minor, 2 if seventh, 3 if minor seventh

LINE—saves line number to get sound numbers from

F—counting loop

A—current data

FRET—vertical position while writing dots

I—counting loop

TIME—loop to allow notes to sound individually

TONES(63)—array holds sound numbers and names in seven chord "memory"

TONE—current location in the array TONES

ONE—root of chord being put into "memory"

THREE—major third of chord being put into "memory"

FIVE—major fifth of chord

SEV—seventh of chord

MINTHREE—minor third of chord

Frank Imburgio and Grace Barry are the founders of Homespun Software in Setauket, New York. The company's stated aim is to produce home applications software that is easy to use, but not limited by its easiness.

Listing on page 59



# the Musician

Type-in "music construction" software

by  
ANGELO  
GIAMBRA

*Powerful and versatile "music construction" program. You can easily compose songs with three-part chord backgrounds—or simply copy the notes and chord symbols from sheet music. This BASIC program runs on any Atari computer with 32K memory. Disk or cassette.*

**W**ith The Musician, you can easily enter and hear playback of any song on your Atari—with a full background of three-part chords. Only an elementary knowledge of music is required. In fact, you can simply copy your favorite songs directly from sheet music. You set The Musician to play harmony chords by simply naming them—the program fills in the required notes!

Type in Listing 1, checking it with **TYPE** and **SAVE** it to either cassette or disk. Antic Disk subscribers will find a short demonstration song

bonus file. Here's how to use The Musician.

## USING MUSICIAN

When you **RUN** The Musician, you will see an introductory screen for a few seconds as the program initializes. A music staff will then appear on the screen with a single red note.

Use your joystick to move the note up and down on the staff. If you are working from sheet music, simply place the note in the same position you see it on the sheet music. To enter the note, press the joystick button. The note will turn white. Then The Musician will briefly play your chosen note and a new red note will appear.

## TIMED NOTES

Placing your note on the staff just gives you the basic pitch. You must still set time values, indicate if a note is sharp or flat, and enter rests or dotted and sustained notes.

You select these various note types by pressing keys on the Atari. Here is

how it works.

Whole notes	W
Half notes	H
Quarter notes	Q
Eighth notes	8
Sixteenth notes	6
Thirty-second notes	3
Dotted notes	.
Sustained notes	S
Sharp notes	#
Flatted notes	B
Natural notes	N
Rests	R

A little music information here: There are various "time signatures" possible at the start of a piece of music. In the most common types,  $4/4$  (standard) and  $3/4$  (waltz), a quarter note would be held for one beat, half note is two beats and whole note is four beats. An eighth note is half a beat, sixteenth note is one-fourth of a beat and a thirty-second note is one-eighth of a beat.

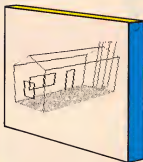
Dotted notes increase the time a note is held by half its normal value.

*continued on page 50*

# VIEW 3-D

Rotate and zoom 3-D  
images in ACTION!

by PAUL CHABOT



requires ACTION! cartridge, disk drive and 48K memory. Antic disk subscribers can run VIEW3D.EXE without the ACTION! cartridge. Disable BASIC and use the L option from DOS 2.05. Disk or cassette.



Create 3-D wire-frame outline pictures in your Atari's highest resolutions, Graphics 8 and Graphics 7+. Magnify, shrink, rotate, and otherwise shift your view of the 3-D picture easily and fairly quickly. Re-

When Paul submitted View 3-D to Antic, we saw it was easily the largest ACTION! program any magazine had considered publishing. But in recent months, we have received so many letters from readers wanting ACTION! that we thought it was time for a monster example of programming in this powerful Atari language.

Be warned: there are ten separate program listings, nine of which are dependent on and INCLUDED into the tenth to form one main program. Because of the nature of ACTION! there is no TYPO II, so type patiently and carefully. The results will be well worth it. —ANTIC ED

**T**here are different approaches to 3-D viewing. You can leave the viewing point ("eye") fixed and rotate the object. Or you can think of the object as fixed and change the location of the eye. These are mathematically equivalent, but conceptually quite different to most people.

Also, should the projection be perspective or orthogonal? Where should the focus be placed? View 3-D will allow any combination of these variations and more. To manipulate a 3-D frame quickly, you need faster number crunching than BASIC: pro-

gram 78M and MISCL. This third program, when compiled, will compile the first two, and so on.

VIEW3D is too large to be compiled and run from the ACTION! editor. When all your files are properly typed in, clear the editor and, from the monitor, type: C: "VIEW3D.ACT". After the compilation is complete, type [R] and away you go.

## THE PROGRAM

The first thing you should see is the menu screen. View 3-D alternates between two screens—the *menu* screen and the *view* screen. The menu screen

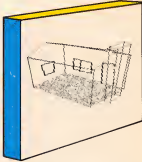
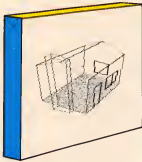
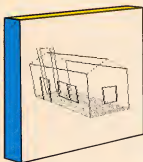
screen. One-key commands are acted upon immediately. No [RETURN] is needed.

[B] Returns you to the menu at any time.

[G] Switches you between GR. 7+ and GR. 8. GR. 7+ offers four colors (counting the background), changed with the [C] selection (below).

[C] Alters the GR. 7+ color registers. The message line at the bottom will indicate the current color number (0-3), its current hue and luminence values, plus the word Default.

The keys [C], [H], [L] increment the



vides. The answer is ACTION!, the cartridge-based programming language from Optimized Systems Software, which is becoming increasingly popular with serious Atari programmers.

## TYPING IT IN

View 3-D is one program, but it has been split into ten files. Listing 10, called VIEW3D, is the main file which INCLUDES the other nine. If you look at the beginning of listing 10, you can see the name of the other files.

Type each file in the order they are INCLUDED in Listing 10. Each subsequent file shares procedures from previous ones, none may be compiled or run independently. You can partially check your work by compiling programs accumulatively in the order in which you type them. For example, GR78M may be compiled alone. After typing in MISCL, create a temporary third program which INCLUDES

has command options and a disk directory. The view screen shows your 3D drawing. Shortly after the menu appears, the colors will alter and the program will switch to the view screen and display a simple 3-D object called "Plane" which is similar to Figure 1.

## THE COMMANDS

With the exception of [D], any key pressed will take you to the view

color, hue, and luminence. This can be used while in GR. 8. But the effect may be misleading because the GR. 7+ registers and the current screen registers are being altered but not the GR. 8 default values. The [D] key resets all GR. 7+ registers to default values. These values are updated each time you load a data file. Also, none of your playing will affect the menu screen colors, since these are main-

continued on next page

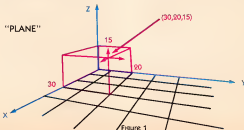


Figure 1

tained separately. Any other key terminates this routine.

[M] Magnifies the object. This is initially set at 4 and wraps to 1 when incremented past 9. You won't see the effect until the picture is redrawn by pressing [SPACE].

[V] Changes the view between perspective and orthogonal. Perspective, which emulates our vision, takes into account the distance from the eye, whereas orthogonal is used in drafting and engineering.

Figures 2 and 3 show the difference between perspective and orthogonal projections.

## PREROTATE

These selections let you rotate your object about any of the three X, Y and Z axes. The message line shows the values of rx (rotate X), ry (rotate Y), rz (rotate Z), and ri (rotational increment). Each time the [X], [Y] or [Z] keys are pressed, the object rotates about the chosen axis in ri increments. The rotations are about axes that pass through the focus point.

The [I]/[J] keys increment/decrement the value of ri in degrees. Negative values of ri make rotations go in the opposite direction.

## POINT OF VIEW

The following commands affect your dimensional view of the object.

[3] Fix EYE/dist. The eye coordinates are controlled by your joystick. Selections [1]-[4] use the same joystick scheme. Left/right alters the X coordinate, up/down alters the Y, and up/down while holding the trigger alters the Z. In selection [3], left/right with the trigger pressed controls the distance. Press [SPACE] to draw your object from this new eye location.

Remember that the eye coordinates are relative to the focus point (see [4] below) and only establish the viewing direction in the orthogonal view. The eye-object distance is important only in the perspective view. Keep the distance large to avoid distortion.

[4] Change FOCUS. The focus is the point in space at which the eye is aimed and through which all the rotation axes pass. It is normally on or near

the object being studied and will be mapped to center screen (cx,cy). Move the flashing dot with your joystick. More importantly, watch its coordinates. Use [SPACE] to set your choice.

[5] Change CENTER. This alters cx and cy, shifting the object. These are actual screen coordinates (0,0 is the upper left). Use [SPACE] to set your choice and see the effect.

[0] Resets the center, eye, focus, magnification, and prerotation values to defaults used at start-up.

## I/O

[D] Lists up to 22 data files in the menu window, assuming they have "V3D" extenders. This is also done automatically at start-up and after each successful save.

[L] Loads a data file from disk. Answer the input prompt with a filename only. The program supplies the "D:" prefix and a "V3D" extender. Upon hitting [RETURN] you'll see the full filespec. Press [L] again to accomplish the load. Any other key will abort the process.

[S] Saves data to a disk file. The process is the same as the above [L] load.

[P] Outputs to your printer. After pressing [P] you may choose to print the picture data [D] or the picture [P]. The picture is produced by a short screen dump for a Gemini 10X. You'll get best results by printing the GR. 8 picture.

To alter the printout procedure for your own printer, examine the **Print** procedure in the **PRINTIO.ACT** file and adapt accordingly. The **st** array contains printer control codes 26, 51, 16 which, on the Gemini, set the line feed to 16/144 inches. In the **pre** array, the 27, 75, 192, 0 mean print normal-density graphics (60 dots/inch) using 192+256\*0 characters. If you have an Epson FX-80, for example, you need only change the line feed commands: Change the 16 to 24 in the **st** array, and later in the procedure at **st(3)=16**. Also, change the 20 to 30 in **st(3)=20**.

## 3-D DRAWING

It's not easy to draw in 3 dimensions. The easiest way to learn is simply to

try it. Concentrating on the changing coordinates in the message line may be easier than watching the dots and lines on the screen.

However, before you start, you may wish to save the object currently in memory. The process is easier to understand if you use the **EDIT** command, [2], to display a blank screen. Each time you press the [SPACE] bar, the screen will step through the drawing process of the object in memory, showing you how to construct a drawing.

To get started on your own, press [0] to use default values. To create a blank screen, press [2] then [1]. The joystick moves a flashing dot, whose coordinates appear in the bottom line. Position the cursor where you want it, and establish that point by pressing the [SPACE] bar. Your current updated point number will be displayed in the bottom line. Next, move the cursor to your second location, press [P] to switch from "Plot" to "Line/0" and press [SPACE] to draw the line.

For starters, keep it simple, or try editing a sample drawing. (The program can take up to 200 data points.) To edit a previous drawing, press [1] to ADD points and lines. As you step through the drawing by pressing [SPACE], you can change any of the values at any point, or you can begin adding to the last points. You can, of course, save your object to disk at any time.

## DATA STORAGE

At this point, you need to understand a little about how data for your 3-D object is stored. The **INTEGER** array **P** contains all the information in the following format:

$$P = [n: x y z: d: x y z: c: \dots : x y z: c: \dots ]$$

**P(0)=n** is the number of data points in your object. The next four integers contain **EYE** data. The first three indicate the direction away from the **FOCUS**, and the fourth gives the distance.

The following four integers contain the three space coordinates of the focus point and a presently unused



value. These nine integers are followed by  $n$  data sets for your object. Each is made up of four integers containing the three space coordinates for a point and a fourth coded message. The encoding of the fourth integer is given by  $c = \text{color} + 16 * p$ , where  $p = 0$  for "Line0" and  $p = 1$  for "Plot".

## SAMPLE DATA

You can enter the data in figure 4 in the ADD mode to create a house with windows and a red chimney. Press [2], then [1] to clear memory. Now use your joystick to get the coordinates in the message line to match those of the first point in the example. Hit [C] and [P] as needed and set the data by hitting [SPACE]. Now do the same for the second point in the example, etc.

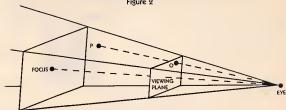
You can even do a little at a time. Just save the portion you've done. Next time load in this file, press [1] and continue from where you left off. A couple of examples will show you how to read the notation. "10 20 15 P2" means to Plot (10,20,15) in color 2. Whereas "20 20 30:L3" denotes a color 3 Line0 (20,20,30). Each example has suggested EYE and FOCUS data.

*Longtime Antic contributor Paul Chabot is a professor of mathematics and computer science at California State University, Los Angeles. He wrote "Splash In ACTION!" in our April 1985 issue.*

Listing on page 34

## PERSPECTIVE PROJECTION

Figure 2



## ORTHOGONAL PROJECTION

Figure 3

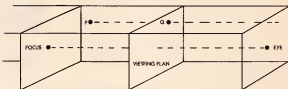


Figure 4

```
HOUSE : eye=(10 3 5:160) focus=(15 30 20)
(0 0 0:P2)      (30 0 0:L2)      (30 60 0:L2)
(0 60 0:L2)     (0 0 0:L2)       (0 0 40:L2)
(15 0 50:L2)    (30 0 40:L2)     (30 0 0:L2)
(30 60 0:P2)    (30 60 40:L2)    (15 60 50:L2)
(0 60 40:L2)    (0 60 0:L2)     (0 60 40:P3)
(0 0 40:L3)     (30 0 40:P3)    (30 60 40:L3)
(15 60 50:P2)   (15 0 50:L2)    (30 10 0:P3)
(30 10 25:L3)   (30 20 25:L3)   (30 20 0:L3)
(30 30 10:P3)   (30 30 25:L3)   (30 50 25:L3)
(30 50 10:L3)   (30 30 10:L3)   (30 40 10:P3)
(30 40 25:L3)   (10 60 10:P3)   (10 60 25:L3)
(20 60 25:L3)   (20 60 10:L3)   (10 60 10:L3)
(10 0 0:P1)     (10 -5 0:L1)    (20 -5 0:L1)
(20 0 0:L1)     (20 0 55:L1)    (20 -5 55:L1)
(20 -5 0:L1)    (10 0 0:P1)    (10 0 55:L1)
(10 -5 55:L1)   (10 -5 0:L1)   (10 0 55:P1)
(20 0 55:L1)    (10 -5 55:P1)   (10 -5 55:L1)
```



# TURBO TYPO II

## Speedy three-line enhancement

by DAVID McLAUGHLIN

*Changing three lines in TYPO II gives assembly language speed to Antic's program typing checker. (See Listing Section.) TURBO TYPO II will work on all Atari computers of any memory configuration.*

When Andy Barton started working on TYPO II, he wrote it as a machine language vertical blank interrupt routine which fit in Page Six of memory. Following a suggestion from Bill Wilkinson of Optimized Systems Software—who wrote the original TYPO—we decided to switch to an all-BASIC TYPO II. Antic felt that novices, who most needed TYPO II, would have a much easier time if they didn't have to type in a lot of data statements.

We also wanted a simple program that the widest range of readers could have fun tinkering with. (See the I/O pages in both the April and May issues for some earlier enhancements.) Judging by the many thank-you letters from new Atari users and the large number of improvements that more experienced readers have sent in, Antic certainly succeeded in both goals.—ANTIC ED

### TURBO TYPO II

TYPO II is an enormous help, but it does have an annoying drawback—the longer the line, the more time required to check it. My object was to

speed up TYPO II while producing the same two-letter code checksums.

I noticed the slowdown came from line 32150 of the original code. This line was an elegant solution, creating a unique code that also checks for correct letter order (i.e. distinguishes between TO and OT).

Therefore, the best way to speed up TYPO II was to write the line 32150 procedure in machine language. Thus, I created Listing 3, TYPO II, in ML. But you do NOT need to type this listing to create an enhanced TYPO II. It is included primarily for your information.

### TWO CHOICES

I have provided two ways to create the necessary enhancements. Listing 1 is all you need to add to the current TYPO II. If you are one of those brave souls who doesn't mind typing in a lot of special and inverse characters then simply use your old TYPO II to type in Listing 1. When done, press [BREAK] then SAVE or LIST your enhanced TYPO II to disk or cassette.

If you'd rather not take a chance on typing tricky characters, then use your old TYPO II and follow these instructions in exactly the following order.

1. With TYPO II running, type in lines 32015 to 32025 from Listing 1.
2. Type in Listing 2.

3. After Listing 2 is successfully entered, press [BREAK] to stop TYPO II.
4. Type RUN and line 32026 from Listing 1 will be created for you.
5. When the READY prompt appears type GOTO 32000.
6. Type in line 32150 from Listing 1 and your enhanced TYPO II is complete.
7. Press [BREAK] and save the new TYPO II to disk or tape by typing:

LIST "D:TYPO II",32000,32220 or  
LIST "C:",32000,32220.

If you want a SAVED version then type NEW and then ENTER the new, enhanced TYPO II and then SAVE it to disk or tape.

### SOURCE CODE

Listing 3 was created with the Atari Assembler/Editor cartridge. Of greatest interest is the use of three bytes to calculate TYPO II's variable ANS.

Normally, in this type of application, the programmer returns the value of ANS back to BASIC through memory locations 212 and 213 (hexadecimal \$D4 and \$D5) as the Atari creators originally planned. However, ANS can only have a maximum value of 65535, the greatest value two bytes can hold.

continued on next page

## assembly language

The original TYPO II's design allows ANS to become larger than that after the length of LINE\$ becomes greater than about 20-30 characters. But the use of three-byte arithmetic is sufficient to hold the highest possible values of ANS.

A note of caution: TYPO II in ML uses three Page Six memory locations, 1789-1791 (hexadecimal \$6FD-\$6FF). Any program that accesses these three locations will be in conflict with the enhanced TYPO II. But since they are the last three locations on Page Six, there should be little problem.

Listing on page 75



## TURBOPRINT

### HIGH PERFORMANCE PRINTER INTERFACE

Only \$69.95

- Atari 850 compatible.
- Use on Atari 400, 600XL, 800, 800XL, 65XE, 130XE.
- Power-on LED.
- Ribbon cable connector.
- External power supply.
- Page formatting independent of software.
- DIP switch selections of line feed and English translation of control characters.



TURBOPRINT/GTA... \$99.95

- All the above features plus...
- Optional 16K or 32K plug-in buffer.
- Prints Atari graphic characters.
- DIP switch selection of printer.

Interfaces for Atari, Commodore and Apple



Telesys

415-651-2970

## FOR ATARI\*400/800/1200/600XL/800XL\*

### the XL BOSS

For ATARI 800XL, 600XL with 64k Replacement operating system to run the vast majority of all ATARI software. No translator or disk to load!

Proper RESET operation especially important for programs like LETTER PERFECT, DATA PERFECT, TEXT WIZARD, etc.

One touch access to extra RAM, all RAM. One touch BASIC on. Easy plug in installation.

**NOW INCLUDES DUAL OPERATING SYSTEM BOARD!**

\*Includes MacroMon XL which is an excellent, unique monitor for beginner and pro alike—written especially for the BOSS. \$79.95 for 800XL/600XL with 64K\*.



An all machine language text, graphics, mixed mode dump for EPSON, GEMINI, NEC, PROWRITER, OKIDATA, M-T SPIRIT, 160L, KXP-1090, DMP-80, ISD 480, SEIKO/AXIOM GP550A.

Self booting can be used while programming or even running other programs.

Works with or without BASIC, ED/ASM, PILOT, LOGO Calendar generator. Horizontal format allows text to be continued in same direction. Change widths, height, center and much more from the keyboard or your program. Special handlers for PAINT, Micro-Illustrator, LOGO, Macropainter, etc. Includes LISTER program for inverted and special characters plus demos and ideas. \$29.95\* 16K Disk. All interfaces.

### diskwiz-II

Fast and easy to use repair, edit, explore, dup, disk utility package. Single load, single or double density. Special printout capabilities.

Repair or change of linked DOS2 or OSA+2 files, directories, dup filenames. Fast searches, mapping, file trace. Disassembler, speed check and much more! Low priced, fast, easy, and powerful! \$29.95 16K Disk.

Send S.A.S.E. for update info.

\*TERMS. U.S. funds, check or M.O. add \$2.50 shipping/handling add 6% CA — 6.5% LA COUNTY add \$3.00 for C.O.D. No charge cards accepted add \$2.50 foreign orders normally out within 48 hours

**ALLEN  
MACROWARE**

P.O. BOX 2205/REDONDO BEACH, CA 90278  
(213) 376-4105

\* Trademark of Atari, Inc.



# G.U.P. the GREAT

*Fast graphics  
power from BASIC*

by DAREK MIHOCA

**G**raphics Utility Package (G.U.P.) is a BASIC program that creates a boot file. When this file is installed in your Atari's memory several new and powerful graphics commands are available to you in the form of USR calls.

G.U.P. features include:

- PLOT and DRAWTO about 3-5 times faster than normal.
- Circles and boxes drawn at high speed.
- Several lines drawn at once for high speed.
- Access by a 400 or 800 to the 4 new XL graphics modes.
- Choose solid or multicolor patterns.
- Mix text with graphics.
- A simple 128 color rainbow command.
- Direct commands in GTIA modes.

*Speed up your BASIC graphics commands and add powerful new ones—including circles, squares and patterned fills. Atari 400/800 owners can now access graphics commands available only on the XLs. Requires a disk drive and will run on all Atari computers with 48K memory.*

## TYPING G.U.P.

Type in Listings 1 and 2. Check them carefully with TYPO II and make sure no lines have been missed. These programs use machine language routines which could lock up your computer if mistyped, so be sure to SAVE backup copies before RUNning them.

Listing 1 will create an AUTO-RUN.SYS file on disk. RUN the program and at the prompt insert a formatted disk with DOS 2.0S, press START and G.U.P. will be written to disk. (Note: because of the G.U.P. file structure, do NOT use DOS 3.). Now,

*continued on next page*

boot the disk, the screen will change color and G.U.P. will be in memory.

## DEMONSTRATION

To test G.U.P., LOAD Listing 2 into memory and RUN it. Listing 2 is a demonstration program that will take G.U.P. through its amazing paces and provide examples of how to use G.U.P. in your own BASIC programs.

Lines 40-180 of Listing 2 are essential to any BASIC program using the G.U.P. commands. These lines determine the starting locations of the different routines and store them in command variables. You can remember them for your convenience, but they must be executed before any G.U.P. commands are given.

## LOCK-UP

G.U.P. is really a series of USR calls, which are assembly language routines

that are accessed from BASIC. Computer newcomers, who may be a little wary of USR routines should read last month's "USR Routines" by Ernie Negus.

When using assembly language routines, there is always a good possibility of computer lock-up—your keyboard no longer responds and there's nothing to do but turn off your computer and start all over again. Lock-ups can occur with just one mistyped character. They're time-consuming and annoying and you may lose unsaved data. But they won't harm your machine, so don't be afraid to experiment.

## G.U.P. COMMANDS

G.U.P. has 10 separate commands: GRAPHICS, SET, PLOT, DRAWTO,

LINE, BOX, CIRCLE, TEXT, RANDOM, and CI28. Here is a description of each:

**GRAPHICS x**—Establish graphics mode. Any one of the 16 graphics modes can be selected. This allows a ROM B Atari to access the 4 new ROM C graphics modes with one command. To access the 160X192 4 color mode (GR.15 on XL computers), use the command:

```
A = USR(GRAPHICS,15)
```

**SET a,b,c,d**—Choose patterns. Each parameter contains color data for 4 pixels necessary for the pattern of colors. (See the explanation later on.) To set the colors to simulate the BASIC command COLOR 1, use:

```
A = USR(SET,85,85,85,85)
```

**PLOT x,y**—Same as BASIC's PLOT. Use:

```
A = USR(PLOT,X,Y)
```

**DRAWTO x,y**—Again, the same as BASIC's DRAWTO. Use:

```
A = USR(DRAWTO,X,Y)
```

**LINE x1,y1,x2,y2**—Similar to DRAWTO, except that the first parameter is the starting pixel. For example, to draw lines from pixel 0,0 to 10,5 to 20,3 use:

```
A = USR(LINE,0,0,10,5,20,3)
```

The DRAWTO and LINE commands can have more than one parameter.

That is, if 5 pairs of coordinates are given, then a line will be drawn from the first to the second, then the second to third, and so on. This saves time and memory.

**BOX x1,y1,x2,y2**—This will draw a filled-in box whose opposite corner coordinates are (x1,y1) and (x2,y2). A 10 pixel square box is draw with:

```
A = USR(BOX,0,0,10,10)
```

**CIRCLE x,y,r**—this draws a circle of radius r pixels at location x1, y1. This command works about 30 times faster than any BASIC algorithm I've tried. A large circle in GR.15 is drawn by:

```
A = USR(CIRCLE,79,79,75)
```

**TEXT x,y,"abcd..."**—this will print out the given string of length l in graphics modes 4,6 or 8 at coordinates x,y. This allows easy mixing of text and graphics. It should be used in a 2 color mode to make the letters readable. To put the word ANTIC in the upper left corner of the screen use:

```
A = USR(TEXT,0,0,ADR  
("ANTIC"),5)
```

Repeating the command will erase the word and restore any graphics that were underneath.

**RANDOM**—This command simply puts random colors in the color pattern. The command is:

```
A = USR(RANDOM)
```

**CI28 d,r**—This produces a 128 color rainbow display for the given duration (d in 1/60ths of a second) in the given color register (r). R is determined by subtracting 704 from the location of the color register. For example, to make a rainbow of the background (location 710) for 10 seconds use:

```
A = USR(CI28,600,6)
```

## VARIABLE REGISTERS


Four variables are established as registers in G.U.P.

CIRF is a variable used to switch between empty-circle drawing and filled circles. POKE CIRF,0 for empty

circles or POKE CIRE,1 for filled ones.

Memory location 208 is used with the command GRAPHICS. Since G.U.P. can only plot up to a co-ordinate of 255,191, the co-ordinates from 256,191 to 319,191 in graphics mode 8 cannot normally be accessed. By poking an 8 into 208, the co-ordinate plane is shifted over 64 pixels and A=USR(PLOT,0,0) would actually plot at 64,0.

The memory locations SETCOLOR



to SETCOLOR+8 are values that are copied into memory locations 704 to 712 when a GRAPHICS command is executed. By poking into these locations, the default colors of the screen can be changed, as they already are in G.U.P. For example, in graphics mode 0, to change the screen color to black, a POKE 710,0 is run. To set G.U.P. to make the screen black every time a GRAPHICS command is given, do a POKE SETCOLOR+6,0 since 710=704+6.

## SET COMMAND

One of the best things about G.U.P. is that it doesn't just draw in solid colors. A 1x4, 2x4, 4x4 or 8x4 color pattern is stored at memory locations COLOR to COLOR+3. The size of the

pattern is determined by the graphics mode. This is because text modes use one byte per character, GTIA modes use one byte to display 2 pixels, 4-color modes use one byte for 4 pixels, and the 2-color modes can store 8 pixels in a byte.

The pattern can either be POKED in, or put in with the SET command. This way circles can be drawn in a checkerboard pattern, lines can be dotted, and more.

The formula for determining the parameters to use in the SET command is quite simple. Just like BASIC's COLOR command which selects one of the 4 color registers for plotting, each one of the 4 parameters passed in the SET command determines the color registers for a 4x1 array of pixels in a 4-color mode, 8x1 in a 2 color mode, 2x1 in a GTIA mode.

Using 2-color modes 4, 6 and 8, an 8x4 pattern can be set up. This means that during PLOT, DRAWTO, LINE, BOX, or CIRCLE, the pixels will be plotted so that if the whole screen is filled up it will be made up of little 8x4 boxes of the same pattern. By making the pixels alternate from black to white, a very fine checkerboard pattern is made as follows: Let 0 represent a pixel in color 0 and a 1 represent a pixel in color 1. The pattern is therefore

```
01010101
10101010
01010101
10101010
```

This pattern represents 4 binary numbers. In decimal they are 85, 170, 85 and 170. Therefore the command to give is:

A=USR(SET,85,170,85,170)

If you just want to plot with color 1, the whole pattern would be 1's and the four numbers would each be 255 (11111111 in binary). Similarly, if you want to plot with color 0, use the number 0 four times.

In a 4-color mode, 4 colors can be used so each pixel must be represented by two bits: 00, 01, 10 or 11. This is why only 4 can be used in one byte. Similarly, in a GTIA mode, 16 colors are possible, therefore 4 bits are

required per pixel and only 2 pixels fit in one byte.

In a text mode, 0, 1, 2, 12 or 13, the four numbers represent a block of 1x4 characters. Each number is the ATASCII code of the character.

If you wish to POKE these values instead of using the SET command,



locations COLOR to COLOR+3 are where the four parameters of the SET command go and can be POKEd directly.

## FEEL FREE

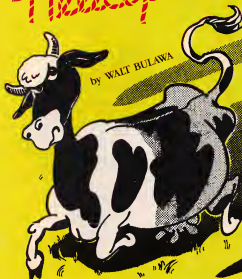
Luckily, you don't really need to understand any of this. Simply try out different numbers in the SET parameters until you see what you like. This holds true of all of G.U.P. Many of these routines may be placed in strings for those more advanced programmers. Feel free to experiment.

*Derek Mibocka placed in the top 10 in three nationwide Canadian university math and physics contests. He's a member of the Toronto Atari Federation and a licensed glider pilot.*

Listing on page 68



# Helicopter Round-up



In Australia there are more men than women and more cows than men. To keep the cows under control, ranchers use helicopters. Your helicopter is supposed to scare the cows into their holding pen.

In case you've never buzzed a bovine with a helicopter before, you'll need some advice. As you maneuver your joystick-controlled copter closer to the herd, the animals get increasingly skittish and move away from you. Steering helpers into a corral isn't easy.

While patiently waiting for you to get airborne, the cows move randomly. Then after all of the cattle have been packed into their pen, the gate will close. You must return the copter to the landing pad for a full score.

But if you run out of fuel, your helicopter will crash and kill some innocent cows.

## USING THE PROGRAM

To get this game off the ground, type in Listing 1, check it with TYPO II, and SAVE a copy. When you RUN Helicopter Roundup, you'll have to wait while the screen blanks for initialization (don't panic). Then you'll see the game.

You can [SELECT] the number of cows to herd, and you can refuse during play by positioning the copter over the landing pad and pushing the joystick trigger.

The game continues indefinitely until all cows are controlled or you crash.

*When he's not rounding up redefined cow characters, Walt Bulawa is an application programmer for the medical field.*

Listing on page 71



*Cows? Helicopters? In your Atari? You bet! This BASIC action game challenges you to round 'em up from the air. Works on all Atari computers of any memory configuration. Disk or cassette.*







Verify SUPERIOR to any translation programs  
available for ATARI  
1200XL/500XL/800XL with 64K.  
(Please specify computer model number!)

\$69.95 (Rom)  
\$49.95 (D or C)

## THE XL "FIX"!

The Atari XL series computers represent power, sophistication and flexibility virtually unrivaled in today's Home Computer Market.

With "approximately" 30-40% of existing software being "incompatible", a real and serious problem exists. Because of this we have developed THE XL "FIX".

ADVANTAGES over cheaper "translation products"

1. The XL "FIX" is capable of taking more software - an estimated 30% more software!
2. The XL "FIX" is available in DISK, CASSETTE, and now ROM!
3. XL "FIX" versions fix ALL THREE types of software (Disk - Cassette - and Cartridges)
4. The XL "FIX" (disk or cassette) adds OVER 4K of usable RAM to your computer (anyone using Data bases or Word processors will really appreciate this feature!)
5. You never have to hold the OPTION button down on 600XL or 800XL computers!
6. VERY IMPORTANT! You need to load the XL "FIX" only once, . . . you can change disks, cassettes, or cartridges without rebooting the XL "FIX" each time (disk or cassette!)
7. The ROM version is instantaneous upon computer power up, has a high speed cursor, is instantly switchable to your original operating system, will work with 16K 600XL's, and more!

The XL "FIX" . . . another SUPERIOR product! 64K required!

DISTRIBUTOR/DEALER inquiries welcome

Most major Supermarkets,  
Order or Cashier Check.  
Phone (716) 467-9326  
Please specify computer  
model number!

Serial 511-15 (511-15 for Rom)  
plus \$4 shipping and handling  
(N.Y.S. residents please add 7% for  
COMPUTER SOFTWARE SERVICES  
P.O. Box 17660  
Rochester, New York 14617



\$69.95 (Rom)  
\$49.95 (D or C)



THREE NEW PRODUCTS!

## THE "SUPER PILL"!

Exactly the same as the WORLD'S leading cartridge backup device THE PILL except it's even simpler to operate, it's SWITCHEABLE! Excellent for families having young children. Totally eliminates opening computer doors and switches. THE "SUPER PILL" is the most advanced state of the CARTRIDGE BACKUP device available. It is totally compatible with all Atari computers and all programs backed up by the original "PILL" Only \$29.95 plus \$4 shipping and handling.

## THE "PROTECTOR/SILENCER"!

The "PROTECTOR" is a disk and hardware modification (no soldering) for Atari 218, 1050, and Indus 64 disk drives that will allow you to write true BAD SECTORS wherever you wish (not to be confused with ridiculous speed control or tape jerking schemata!) Potential disk program finds hidden directories, scrambles existing directories, lost maps, hex conversions, disk dupes, and much more!

The "SILENCER" quiets your drive immediately (eliminates the LOUD grinding noise when you read a bad sector), PLUS it gives you to WRITE to BOTH SIDES of any disk WITHOUT cutting or notching the disk! Both for only \$49.95 plus \$4 shipping and handling.

## THE "COMPANION"!

An amazing device that will enhance the capabilities of the XL "FIX" or Atari Translator. It will allow you to de-select BASIC (no more need to hold the OPTION button while loading programs on the 600XL's and 800XL's), and it will allow you to de-select the DIAGNOSTICS (no more bad boots because of the DIAGNOSTICS jumping into the middle of your program load routine!) Installation is simple (10 minutes) and requires NO soldering! Only \$29.95 plus \$4 shipping and handling.

DISTRIBUTOR/DEALER inquiries welcome

Our other products include THE "PILL", XL "FIX", "IMPOSSIBLE!", "METAMORPHOSIS", and "REMOTE".

Please add \$4.00 shipping.  
Order or Cashier Check.  
Phone orders:  
(716) 467-9326.

Atari is a TM of Atari Inc. The  
"METAMORPHOSIS" is a TM of  
Computer Software  
Services (division of C.S.S.D.,  
Inc.)

COMPUTER SOFTWARE  
SERVICES  
P.O. Box 17660  
Rochester, New York 14617



\$149.95

For years they said it couldn't be done

## THE "IMPOSSIBLE"!

they claimed



\$149.95

Backup almost any disk currently available (even heavily protected programs) with an UNMODIFIED disk drive!  
Works with ANY disk drive!

PURPOSE: The "IMPOSSIBLE" was developed in response to the estimated half million disk drive users that own a drive other than the Atari 210 (Indus, Percom, Trak, Rana, Astra, etc.) that wish to BACK UP their protected software. Due to radically new technology developed by Computer Software Services, modification to your disk drive has been eliminated! The advantages are obvious! Drive warranties are not violated, the chance accidental damage has been eliminated, etc., etc.

OPERATION: The "IMPOSSIBLE" consists of a disk program (unprotected so you can make as many backups as you wish) and a 4K STATIC RAM pack which is inserted into your computer (no soldering!) The "IMPOSSIBLE" will read your program disk and then re-write it on an unprotected format! You may make additional backup copies using a sector copier or even regular DOS! Because your backup copy no longer has BAD SECTORS or EXOTIC FORMATS, the program data can now be manipulated into DOS compatible files (even double density!), transferred to cassette, etc. (with the aid of our Softelite programs) No user programming knowledge required. All programs require logical thinking.

- |           |  |  |
|-----------|--|--|
| FEATURES: | 1. Backup protected disks                  | 5. AFSD-Automatix FUZZY Sector Discriminator |
|           | 2. Handles most MULTI-LOAD programs        | 6. Expands computer memory to 52K usable     |
|           | 3. Makes DOS files (with Satellite option) | 7. Simple NO SOLDER install option           |
|           | 4. Up to 90K data input/capable            | 8. Softelite program able                    |

PROJECTED SATISFACTION: A "COMPACTOR" program which will convert your program into DOS compatible files (double density compatible!) for the storage of several programs on one disk. A "COLUMN 80" program for Word Processing, etc. Follows 80 columns on the screen! The "XL MATE" will allow programs made with your 400/800 "IMPOSSIBLE" to now play on your XL Computer! The METAMORPHOSIS II program will allow you to convert your protected CASSETTES into disk DOS files and vice-versa. All satellite programs must be used in conjunction with the "IMPOSSIBLE".

REQUIREMENTS: The "IMPOSSIBLE" diskette, the 4K STATIC RAM pack, a 400 or 800 computer (please specify) with 48K and "B" Rom's. NOTE! The very old Atari computers were shipped with "A" Rom's which had some serious "bugs". Even if you don't own an "IMPOSSIBLE", you should upgrade to "B" Rom's (simple to install) We have them available at a very inexpensive price. CALL US "XII" version available soon!

NOTA FRANGIBIT TOOK: We at C.S.S.D. did not design THE "IMPOSSIBLE" to put Software Manufacturers out of business overnight! Nearly all of our products have been "tried-off" by industry parasites who have little or no ability to develop a product of their own so we can sympathize with their dilemma. All C.S.S. products have built in safety guards which prohibit their use for flagrant pirating. The "IMPOSSIBLE" is no exception! While the "IMPOSSIBLE" backup the most heavily protected programs, it also checks to see that the 4K STATIC RAM pack is installed before allowing the backup copy to execute!

EXAMPLES: The "IMPOSSIBLE" has been tested on 300 of the most popular and heavily protected programs we could find. With nearly 4000 programs for Atari, we DO NOT guarantee that it will backup all programs in the past-present-and-future! We will supply updates of \$6 each (non-profit) if and when necessary. Programs we have successfully backed up include: Blue Max, Ws-cad, Archon, Mule, File Manager 800 +, Syn Calc, Syn File, One on One, 7 Cities of Gold, Super Bunny, Lord Runner, Drol, and Gumball just to name a few!

Mastercard-Visa-Money  
Orders or Cashier Check  
Phone (716) 467-9326  
Please specify computer  
model number!

Send \$149.95 plus  
\$4 shipping and handling  
(N.Y.S. residents please add 7%)

COMPUTER SOFTWARE SERVICES  
P.O. BOX 17660  
ROCHESTER, N.Y. 14617

A dotted half note gets held for three beats of a measure. Sustained notes slide into the note which follows them instead of playing as separate notes.

To choose a dotted, sustained eighth note, you would press the following three keys—[.] [8] [S]. The Musician isn't fussy. You may press keys in any order for a multiple-key note command.

When you use the [F] or [B] to make sharps or flats, The Musician will stay in the sharp or flat mode until you press [N] for Natural.

Rests are times when no note is played. To choose a quarter rest, first press [Q] to make a quarter note, then press [R] to make it a rest. Similarly, to make an eighth rest, press [8] [R]. Half rests are [H] [R].

Once you have selected the correct type of note and placed it in the right position on the staff, press your joystick button to enter it.

Press [C] to Cancel the note if you change your mind. [C] always cancels the last note or the last chord entered.

## ENTERING CHORDS

The Musician will recognize even the most advanced kinds of chords. Entering chords is a snap since you enter them by name, not by notes. Press the asterisk [\*] key to tell The Musician you want to enter a chord. The Musician will display:

ENTER A CHORD  
THEN PRESS RETURN

To enter a C chord, press [\*] followed by [C], then press [RETURN]. The Musician will display the name of the chord you have keyed in, and briefly play the chord.

Using the Key of C as an example, here is a complete list of chord types recognized by The Musician.

ENTER	CHORD SELECTED
C	C major
CM	C minor
CM7	C minor seventh
C7	C seventh
CM6	C minor sixth
C6	C sixth

CMAJ	C major seventh
C+	C augmented fifth
C-	C diminished fifth
CD	C diminished

Sharp and flat chords are entered by adding the [F] or [B] keys. For instance, here's how to enter a C sharp minor seventh chord:

Press [\*]  
Press [C]  
Press [F]  
Press [M]  
Press [7]  
Press [RETURN]

Chords in other keys are entered in exactly the same manner. For instance, you enter a G seventh as G7.

If a chord is to play simultaneously with a certain note, enter the chord first, then enter the note.

If you make a mistake when entering a chord and wish to exit from chord mode, simply press [\*] again. The chord will not be entered and you will return to note entry mode again. To re-enter the chord, press [\*] again.

Chords will continue to play in the background until they are changed to something else or turned off. To turn off a background chord, press [O]. The Musician will display: CHORD OFF

## SONG PLAYBACK

To hear a playback of the song you have entered, press [P]. The song will play automatically and each note will appear on the staff as it plays. You may change the tempo of the song by pressing [T] before pressing [P]. The Musician will display:

CHANGE TEMPO SLOWER

Press the joystick button to slow down the tempo. To speed up the tempo, first move the joystick forward. The word SLOWER will change to FASTER. Pressing the joystick button will then speed up the tempo.

After playing a song, it remains in the computer memory. You may continue adding notes to the end of the song. You may clear it from memory. Or you may SAVE it to cassette or disk.

Pressing [ESC] while a song is play-

ing causes The Musician to immediately stop playing the song and return to note entry mode.

## SAVING A SONG

To SAVE a song, press [A] for Archive. The Musician will display:

ENTER SONG NAME

If you are saving to cassette, just press [RETURN]. You will hear two beeps. Put your recorder on record, then press [RETURN].

If you are using disk, type in the song name. Do not use more than eight characters, since this becomes the file name. Three-character extensions are allowed if you like using them. Press [RETURN]. The Musician will write out your song.

## LOADING A SONG

To load a previously saved song, press [L]. The Musician will ask you for the name of the song file.

If you are entering the song from cassette, position the tape to the beginning of the song and press [RETURN].

If you are using disk, type in the song name and press [RETURN].

The Musician will load in the song and play it for you. Once a song is loaded it remains in memory until you clear it out. If you add notes after loading a song, they get appended to the end of the song. In this way, you can finish songs you saved only partially completed.

## CLEAR AND EXIT

To clear a song from memory, press [CLEAR]. Do NOT use the [SHIFT] key. Now you may begin entering a new song.

To exit The Musician, press [E]. The Musician will display

EXIT Y or N

Press [Y] to confirm your choice. The program will end and return you to BASIC.

*Angelo Giambra is a senior programmer for Marine Midland Bank in Rochester, N.Y. His "Eight Queens Problem" appeared in the April, 1984 Antic.*

Listing on page 61



# SOFTWARE LIBRARY

**Antic** type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

► **ROTATE AND VIEW 3-D IMAGE IN ACTION!**

VIEW 3-D ..... 54

► **ENHANCE YOUR PICTURE DETAILS LIKE NASA DOES!**

PIXEL SCANNER ..... 58

► **YOUR ATARI MASTER WEAVER!**

COLOR INKLE LOOM ..... 60

► **"MUSIC CONSTRUCTION" SOFTWARE!**

THE MUSICIAN ..... 61

► **JOYSTICK SELECTION OF PROGRAM HUES!**

COLOR PALETTE ..... 64

► **FAST GRAPHICS POWER FROM BASIC!**

G.U.P. THE GREAT ..... 68

► **LEARN AND PLAY GUITAR CHORDS ON YOUR ATARI!**

GUITAR TUTOR ..... 69

► **GAME OF THE MONTH**

HELICOPTER ROUND-UP ..... 71

► **LOGO**

TURTLE PIANO ..... 74

► **ASSEMBLY LANGUAGE**

TURBO TYPO II ..... 75

TYPING SPECIAL ATARI CHARACTERS ..... 52

HOW TO USE TYPO II ..... 53      ERROR FILE ..... 53

**DISK SUBSCRIBERS:** You can use all these programs immediately.

Just follow the instructions in the accompanying magazine articles.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

Antic program listings are typeset by Star's Gemini 10X Printer—From Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

# TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way Antic prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

```

ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789



```

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below. (Squares are drawn around the normal video characters so you can see their positions more accurately, these squares will not appear in listings.)

NORMAL VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
☐	CTRL ,	☐	CTRL T
☐	CTRL A	☐	CTRL U
☐	CTRL B	☐	CTRL V
☐	CTRL C	☐	CTRL W
☐	CTRL D	☐	CTRL X
☐	CTRL E	☐	CTRL Y
☐	CTRL F	☐	CTRL Z
☐	CTRL G	☐	ESC ESC
☐	CTRL H	☐	ESC CTRL -
☐	CTRL I	☐	ESC CTRL -
☐	CTRL J	☐	ESC CTRL +
☐	CTRL K	☐	ESC CTRL +
☐	CTRL L	☐	CTRL .
☐	CTRL M	☐	CTRL ;
☐	CTRL N	☐	SHIFT =
☐	CTRL O	☐	ESC
☐	CTRL P	☐	SHIFT
☐	CTRL Q	☐	CLEAR
☐	CTRL R	☐	ESC DELETE
☐	CTRL S	☐	ESC TAB

INVERSE VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
☐	▲ CTRL ,	☐	▲ CTRL Y
☐	▲ CTRL A	☐	▲ CTRL Z
☐	▲ CTRL B	☐	ESC
☐	▲ CTRL C	☐	SHIFT
☐	▲ CTRL D	☐	DELETE
☐	▲ CTRL E	☐	ESC
☐	▲ CTRL F	☐	SHIFT
☐	▲ CTRL G	☐	INSERT
☐	▲ CTRL H	☐	ESC
☐	▲ CTRL I	☐	CTRL
☐	▲ CTRL J	☐	TAB
☐	▲ CTRL K	☐	ESC
☐	▲ CTRL L	☐	SHIFT
☐	▲ CTRL M	☐	TAB
☐	▲ CTRL N	☐	▲ CTRL .
☐	▲ CTRL O	☐	▲ CTRL ;
☐	▲ CTRL P	☐	▲ SHIFT -
☐	▲ CTRL Q	☐	ESC CTRL 2
☐	▲ CTRL R	☐	ESC
☐	▲ CTRL S	☐	CTRL
☐	▲ CTRL T	☐	DELETE
☐	▲ CTRL U	☐	ESC
☐	▲ CTRL V	☐	CTRL
☐	▲ CTRL W	☐	INSERT
☐	▲ CTRL X		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key  instead.) Note: In the printed listings, inverse characters will be slightly smaller than the normal ones.

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be *thicker* than the alpha-numerics. Compare the two sets of characters below:

## SPECIAL

```

/  ☐ CTRL F
\  ☐ CTRL G
-  ☐ CTRL N
-  ☐ CTRL R
+  ☐ CTRL S

```

## STANDARD

```

/  ☐ /
\  ☐ SHIFT +
-  ☐ SHIFT -
-  ☐ -
+  ☐ +

```

# HOW TO USE TYPO II

Type in TYPO II and SAVE a copy to disk or cassette.

Type GOTO 32000 and follow TYPO II onscreen instructions. If the resulting two-letter line codes are not exactly the same as those in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk (\*) followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME", 0,31999 [RETURN] (Cassette owners LIST "C:"). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:"). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Owners of the BASIC XL cartridge from O.S.S. type SET 5,0 and SET 12,0 before using TYPO II.

```
NO 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
NS 32020 CLR :DIM LINES(120):CLOSE #2:CLS
SE #3
ON 32030 OPEN #2,4,0,"E":OPEN #5,5,0,"E"
VC 32040 ? "K":POSITION 11,1: ? "*****"
EM 32050 TRAP 32040:POSITION 2,3: ? "Type
in a program line"
HS 32060 POSITION 1,4: ? " ":INPUT #2:LINE
#:IF LINES="" THEN POSITION 2,4:LIST B
:GOTO 32060
KH 32070 IF LINES(1,1)="" THEN #VAL(LIN
E$(2,LEN(LINES)):POSITION 2,4:LIST B:
GOTO 32060
TH 32080 POSITION 2,10: ? "CONT"
MF 32090 #VAL(LINES):POSITION 1,3: ? " ":
NY 32100 POKE #42,13:STOP
CN 32110 POKE #42,12
```

```
ET 32120 ? "K":POSITION 11,1: ? "*****"
":POSITION 2,15:LIST B
CE 32130 C=#ANS-C
OR 32140 POSITION 2,16:INPUT #3:LINE$:IF
LINE$="" THEN ? "LINE ":"0:" DELETED0:G
OTO 32050
VV 32150 FOR O=1 TO LEN(LINE$):C=C+1:ANS=
ANS+(C*ASC(LINE$(O,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
OH 32190 LCODE=CODE-(HCODE*26)+65
HO 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16: ? CHR$(HCODE):CHR$
(LCODE)
VG 32220 POSITION 2,13: ? "If CODE does no
t match press [F4] and edit line a
bove." :GOTO 32050
```

## ERROR FILE

### BUS OVERLINES

Some signals and address labels were printed without overlines in Part III of Earl Rice's Parallel Bus Revealed" (Antic, March 1985).

These are the correct labels:

DSXX—DFXX  
CS (CHIP RESET)  
R/W  
DIXX  
RDE (READ DATA ENABLE)  
DS (DATA STROBE)  
DRST (DEVICE RESET)

### FIRST LESSON IN ASSEMBLY

Line 100 of the listing for "First Lesson in Assembly Language" (November, 1984) should read POKE 755,4 instead of POKE 775,4.

### KOOKY'S QUEST

February '85

The following line is missing:  
2100 FOR S=32 TO 16 STEP  
-4: SOUND 0,5,14,10: EA=EA  
"EA":EA: SOUND 0,0,0,0: EA=1  
/0:NEXT S

### DRUM SYNTH

February '85

In Figure 1, the "ART" should be the Full (inverse) symbol.

### MISSING INFOBITS

DECEMBER '84  
The AL source listing for Infobits (Dec. '84) was left out of the previous issue. You'll find it in the Jan. '85 Software Library.

### ADVENT X-5

November '84

Missing line: 8020 RUN. Also, cassette owners should change the 138 in line 4005 to 130. The TYPO II code for line 1005 is EJ.

### ADVENTURE ISLAND

November '84

Line 837 is missing its last item of data, a 4. Also, it will not run with DOS XL.

# VIEW 3-D

Article on page 38

## LISTING 1

```

; GR70M (LISTING 1)

MODULE:INT xnow=(00),ynow=(90)
BYTE cnow=(1),key=764,rnm=106,cur=752
BYTE ARRAY mask7={64 16 4 1},clor=700
      ,mask8={128 64 32 16 8 4 2 1},mask,row
CARD dlist={560,50=00}
CARD ARRAY adr(192):CARD POINTER mes

PROC Kolor(BYTE C) RETURN
PROC Dot(INT x,y) RETURN
PROC Bit(INT x,y) RETURN

PROC LineTo(INT x,y)
INT dx,dy,xf,yf,a,b,t,i
Dot(xnow,ynow)
IF x=xnow AND y=ynow THEN RETURN FI
IF x>xnow THEN dx=x-xnow:xf=1
ELSE dx=xnow-x:xf=-1 FI
IF y>ynow THEN dy=y-ynow:yf=1
ELSE dy=ynow-y:yf=-1 FI
x=xnow:y=ynow
IF dx>dy THEN a=dy:dy=t-a-dx:b=t-dx
FOR i=1 TO dx DO x=x+xf
  IF t<0 THEN t==a
  ELSE t==b:y=y+yf
  FI Dot(x,y)
DO
ELSE a=dx:dx=t-a-dy:b=t-dy
FOR i=1 TO dy DO y=y+yf
  IF t<0 THEN t==a
  ELSE t==b:x=x+xf
  FI Dot(x,y)
DO
FI xnow=x:ynow=y:RETURN

PROC Gr70M():BYTE i:BYTE ARRAY d1
Graphics(0+16):adr(0)=5a:d1=dlist
FOR i=1 TO 191 DO adr(i)=adr(i-1)+40 DO
d1==4:d1(0)=132:d1(1)=00:d1(2)=16
FOR i=3 TO 190 DO d1(i)=d1(i+4)
DO d1(199)=16:d1(200)=66:mes=d1+201
d1(204)=d1+1:d1(205)=d1:RETURN

PROC Kolor7(BYTE C):BYTE i
c==A S:cnow=c
FOR i=0 TO 3 DO mask(3-i)=c:c==LSH 2 00
RETURN

PROC Dot7(INT x,y):BYTE xb,xf
BYTE ARRAY pre={63 207 243 252}
IF x<0 OR x>159 THEN RETURN FI
IF y<0 OR y>191 THEN RETURN FI
xb=x RSH 2:xf=x AND 3:row=adr(y)
row(xb)==A pre(xf) X mask(xf):RETURN

PROC Bit7(INT x,y):BYTE xb,xf
IF x<0 OR x>159 THEN RETURN FI
IF y<0 OR y>191 THEN RETURN FI
xb=x RSH 2:xf=x AND 3:row=adr(y)
row(xb)==! mask(xf):RETURN

PROC Gr7(BYTE ARRAY d):BYTE i
mask=mask7:Kolor=Kolor7:Dot=Dot7
Bit=Bit7:d(3)=70:d(99)=70
FOR i=6 TO 90 DO d(i)=14 00

```

```

FOR i=182 TO 190 DO d(i)=14 00:RETURN

PROC Kolor8(BYTE C):BYTE i
cnow=c A 3:IF c>1 THEN c=-1 FI
FOR i=0 TO 7 00 mask(7-i)=c:c==LSH 1 00
RETURN

PROC Dot8(INT x,y):BYTE xb,xf
BYTE ARRAY
pre={127 191 223 239 247 251 253 254}
IF x<0 OR x>319 THEN RETURN FI
IF y<0 OR y>191 THEN RETURN FI
xb=x RSH 3:xf=x AND 7:row=adr(y)
row(xb)==A pre(xf) X mask(xf):RETURN

PROC Bit8(INT x,y):BYTE xb,xf
IF x<0 OR x>319 THEN RETURN FI
IF y<0 OR y>191 THEN RETURN FI
xb=x RSH 3:xf=x AND 7:row=adr(y)
row(xb)==! mask(xf):RETURN

PROC Gr8(BYTE ARRAY d):BYTE i
mask=mask8:Kolor=Kolor8:Dot=Dot8
Bit=Bit8:d(3)=79:d(99)=79
FOR i=6 TO 90 DO d(i)=15 00
FOR i=182 TO 190 DO d(i)=15 00:RETURN

```

## LISTING 2

```

; MISCI (LISTING 2)

MODULE:BYTE s:INT ARRAY
jx={1 1 1 1 2 2 2 1 0 0 1 1 1 1}
jy={1 1 1 1 2 0 1 2 0 1 1 2 0 1}
BYTE ARRAY b=""

PROC SetJxJy(BYTE i)
FOR i=0 TO 15 DO jx(i)=-1:jy(i)=-1 00
RETURN

PROC Pb(BYTE i):b(0)=i:Print(b):RETURN

PROC Wait(CARD w,j)
FOR j=0 TO w 00 w==+1:w=-1 00 RETURN

; TRIG
MODULE:BYTE ARRAY si(91)

PROC SetTrig(BYTE t INT w)
FOR t=0 TO 90 00 w=(t*7)/45
  y=(w*7)/5:w=100-t-y==45:si(t)=w
  00 RETURN

INT FUNC sin(INT t,y):t==MOD 360
IF t<91 THEN y=si(t)
ELSEIF t<181 THEN y=-si(180-t)
ELSEIF t<271 THEN y=-si(t-180)
ELSE y=si(360-t) FI RETURN(y)

INT FUNC cos(INT t,y):t==MOD 360
IF t<91 THEN y=si(90-t)
ELSEIF t<181 THEN y=-si(t-90)

```

```
ELSEIF t<271 THEN y=-54(270-t)
ELSE y=54(t-270) FI RETURN(v)

: VECTOR
INT FUNC ABS(INT x)
IF x<0 THEN x=-x FI RETURN(x)
```

```
INT FUNC SQR(INT x):INT y
IF x=0 THEN RETURN(0) FI:x=ABS(x):y=0
00 y==+1:IF y*y>x THEN RETURN(y) FI 00
```

```
INT FUNC Vdot(INT ARRAY v,w):INT x
x:=v(0)*w(0):x==+v(1)*w(1)
x==+v(2)*w(2):RETURN(x)
```

```
PROC Vprod(INT ARRAY v,w,u)
u(0)=v(1)*w(2):u(0)=-v(2)*w(1)
u(1)=v(2)*w(0):u(1)=-v(0)*w(2)
u(2)=v(0)*w(1):u(2)=-v(1)*w(0)
RETURN
```

```
PROC Normize(INT ARRAY v):INT i,j,s
i=ABS(v(0))
j=ABS(v(1)):IF i<j THEN i=j FI
j=ABS(v(2)):IF i<j THEN i=j FI
IF i>100 THEN j=i+1/100
FOR i=0 TO 2 00 v(i)=-/j 00
FI
FOR j=0 TO 1 00 s=Vdot(v,v):s=50R(s)
FOR i=0 TO 2 00 v(i)=v(i)*120/s 00
00 RETURN
```

## LISTING 3

: COLORS (LISTING 3)

```
MODULE:BYTE ARRAY default(5),CP
,C7=(52 24 130 194 0)
,CB=(52 26 0 194 200)
,CM=(52 24 194 130 00)
```

```
PROC INCC():BYTE i
i=cnow:cnow==+1:Position(10,23)
IF i=5 THEN i=4:cnow=0 FI
Kolor(cnow):i=cior(i):Print0(cnow)
Position(10,23):Print0(i RSH 4)
Put(' ')Position(27,23)
Print0(i & 14):Put(' '):RETURN
```

```
PROC IncHue():BYTE i,j
IF cnow=0 THEN i=4 ELSE i=cnow-1 FI
j=cior(i) RSH 4
j==+1:IF j>15 THEN j=0 FI
Position(10,23):Print0(j):Put(' ')
cior(i)=(j LSH 4)+(cior(i) & 14)
C7(i)=cior(i):RETURN
```

```
PROC InclumC():BYTE i,j
IF cnow=0 THEN i=4 ELSE i=cnow-1 FI
j=cior(i) & 14
j==+2:IF j>15 THEN j=0 FI
Position(27,23):Print0(j):Put(' ')
cior(i)=(cior(i) & 248)+j
C7(i)=cior(i):RETURN
```

```
PROC defaultC():BYTE i
FOR i=0 TO 4 00 C7(i)=default(i)
cior(i)=C7(i)
00 RETURN
```

```
PROC setofault():BYTE i
FOR i=0 TO 4 00 default(i)=C7(i) 00:RETURN
```

```
PROC CPon():BYTE i
FOR i=0 TO 4 00 cior(i)=CP(i) 00:RETURN
```

```
PROC CMon():BYTE i
FOR i=0 TO 4 00 cior(i)=CM(i) 00:RETURN
```

```
PROC fixC01():INCC()
00 WHILE key=255 00 00
IF key=10 THEN key=255:INCC()
ELSEIF key=57 THEN key=255:IncHue()
ELSEIF key=0 THEN key=255:InclumC()
ELSEIF key=50 THEN key=255:0faultC()
ELSE EXIT FI
00 EXIT
```

## LISTING 4

: ORAH30 (LISTING 4)

```
MODULE:BYTE vflag=(0),sflag=(7)
INT x,y,mas=(3),cx=(00),cy=(90)
,rx=(0),ry=(0),rz=(0),fi=(30)
CARD s01,d11,d12,lin16,lin17,lin18
,lin19,lin20,lin21,lin22,lin23,lin25
INT ARRAY P(009),eye,foc,R(9),E(9),M(9)
,0=(21:10 5 5:100:0 0 0:0:1
50 0 0:10:0 0 0:2:10 0 0:17:
10 50 0:1:20 50 0:17:20 0 0:1:
30 0 0:17:30 50 0:1:40 50 0:17:
40 0 0:1:0 10 0:19:50 10 0:5:
50 20 0:19:0 20 0:3:0 30 0:19:
50 30 0:3:50 40 0:19:0 40 0:3)
```

```
PROC fixP(INT ARRAY 0):INT i,j
Zero(P,1610):j=4*0(0)+0
FOR i=0 TO j 00 P(i)=0(i) 00
eye=P+2:foc=P+10:RETURN
```

```
PROC Rot(INT ARRAY v):INT x,y,z,s,c
v=v(1)
v(1)=v*cos(rx)/120:v(2)=v*sin(rx)/120
x=v(0):z=v(2):s=sin(rz):c=cos(rz)
v(0)=(x*c-z*s)/120:v(2)=(x*s+z*c)/120
x=v(0):v(1)=v(1):s=sin(rz):c=cos(rz)
v(0)=x*c-z*s:v(1)=x*s+z*c:v(2)=v(2)
v(1)=-/120:Normize(v):RETURN
```

```
PROC fixR():INT ARRAY v(3),w(3),u(3)
v(0)=120:v(1)=0:v(2)=0:Rot(v)
w(0)=0:w(1)=120:w(2)=0:Rot(w)
Vprod(v,w,u):Normize(u)
R(0)=v(0):R(1)=v(1):R(2)=v(2)
R(3)=w(0):R(4)=w(1):R(5)=w(2)
R(6)=u(0):R(7)=u(1):R(8)=u(2):RETURN
```

```
PROC fixE():INT s
E(0)=eye(0):E(7)=eye(1):E(8)=eye(2)
Normize(E+12)
IF E(0)=0 THEN E(3)=0:E(4)=0:E(5)=120
ELSEIF E(6)=0 AND E(7)=0 THEN
E(3)=0:E(4)=120:E(5)=0
ELSE E(3)=-E(6):E(4)=E(4)-E(7)
E(5)=E(6)*E(6):E(5)=-E(7)*E(7)
E(5)=-/E(0):Normize(E+6)
IF E(0)<0 THEN E(3)=-E(3):E(4)=-E(4)
E(5)=-E(5)
FI
```

```
FI Vprod(E+6,E+12,E):Normize(E):RETURN
```

```
PROC fixMC()
M(0)=Vdot(R,E):M(3)=Vdot(R,E+6)
M(1)=Vdot(R+6,E):M(4)=Vdot(R+6,E+6)
```

continued on next page

```

M(2)=Vdot(R+12,E):M(5)=Vdot(R+12,E+6)
Normalize(M):Normalize(M+6)
UProd(M,M+6,M+12):Normalize(M+12):RETURN

```

```

PRDC Maksxy( INT ARRAY v): BYTE i
INT px,py,pz,t,d: INT ARRAY w(3)
FOR i=0 TO 2 DO w(i)=v(i)-foc(i) DO
IF vflag=1 THEN px=Vdot(w,M)/128
py=Vdot(w,M+6)/128
sx=cx+mag*px/2: sy=cy+mag*py/2
ELSE d=eye(3): t=mag*d/6
px=Vdot(w,M)/128: py=Vdot(w,M+6)/128
pz=Vdot(w,M+12)/128
d=-p2: IF d<4 THEN d=4 FI: d=-4
sx=t*px/d: sy=t*py/d: sx=sx+cx: sy=sy+cy
FI RETURN

```

```

PRDC CLR(): Zero(s=1,7680): RETURN

```

```

PRDC Draw( INT ARRAY P): BYTE i
INT ARRAY pt
pt=P+18
FOR i=1 TO P(8) DO pt==+8 Maksxy(pt)
Kolor(pt(3):15)
IF pt(3)<16 THEN LineTo(sx,sy)
ELSE Dot(sx,sy): xnow=sx: ynow=sy FI
DO RETURN

```

```

FOR i=0 TO 2 DO Print(i): Put(' ') DO
RETURN

```

```

PRDC Ugr(): Position(1,15)
IF sflag=7 THEN sflag=8: cx==+88: cy=88
Print("xxx GRAPHICS 8 xxx"): Gr8(d11)
ELSE sflag=7: cx==+88: cy=87
Print("xx GRAPHICS 7PLUS x"): Gr7(d11)
FI Ucen(cx,cy)
CPon(3): CLR(): Draw(P): RETURN

```

```

PRDC Ureset(): BYTE i
Position(5,17): Ph(12)
Position(12,18): Ph(12)
Position(8,19): Ph(9)
Position(24,19): Ph(14)
FOR i=1 TO 8 DO P(i)=D(i) DO
mag=s: rx=0: ry=0: rz=0: r1=38: FixC()
Ueye(): Ufoc(foc): Umag(s): Urot(): Uri()
cy=98: cx=160: sflag=8: Ugr(): RETURN

```

## LISTING 6

```
: STICKSD (LISTING 6)
```

```

PRDC JOYD( INT n): 0=EDIT,1=ADD
BYTE i,k: INT ARRAY pt
IF n=0 THEN f=0 ELSE f=1: n=P(8) FI
n==+1: P=P+18+8n: Upt(n): Uckyz(pt)
Kolor(pt(3):15): Maksxy(pt): Dit(sx,sy)
DO IF n>208 THEN EXIT FI
WHILE Strin(8)=0 DO
st=Stick(8): Dit(sx,sy)
IF st<15 THEN pt(2)=-Ju(st)
Maksxy(pt): Uckyz(pt)
FI Dit(sx,sy)
DO
st=Stick(8): Dit(sx,sy)
IF key<255 THEN k=key: key=255
IF k=35 THEN n==+1: Upt(n)
IF pt(3)<16 THEN LineTo(sx,sy)
ELSE Dot(sx,sy): xnow=sx: ynow=sy FI
IF f=1 THEN
FOR i=0 TO 3 DO pt(4+i)=pt(i) DO
FI pt==+8: Kolor(pt(3):15)
Maksxy(pt): Uckyz(pt)
ELSEIF k=10 THEN IncC()
pt(3)=(pt(3)+16)+cnov: Uckyz(pt)
ELSE key=k: EXIT FI
FI
IF st<15 THEN pt(8)=-Ju(st)
pt(1)=-Ju(st): Maksxy(pt): Uckyz(pt)
FI Dit(sx,sy)
DO P(8)=n-1: RETURN

```

```

PRDC JOYF(): BYTE i: INT ARRAY pt(3)
IF cnov=0 THEN Kolor(i) FI
FOR i=0 TO 2 DO pt(i)=foc(i) DO
Maksxy(pt): Dit(sx,sy): Ufoc(pt)
DO

```

```

WHILE Strin(8)=0 DO
st=Stick(8): Dit(sx,sy)
IF key<255 THEN k=key: key=255
FOR i=0 TO 2 DO foc(i)=pt(i) DO
CLR(): Draw(P): Maksxy(pt)
ELSEIF key<255 THEN EXIT FI
IF st<15 THEN pt(8)=-Ju(st)
pt(1)=-Ju(st): Maksxy(pt): Ufoc(pt)
FI Dit(sx,sy)

```

## LISTING 5

```
: UPDATES (LISTING 5)
```

```

PRDC Uview(): Position(22,15)
vflag==+1: IF vflag>1 THEN vflag=0 FI
IF vflag=0 THEN Print("UPDATE SCREEN")
ELSE Print("UPDATE VIEW") FI: RETURN

```

```

PRDC Ueye(): BYTE i: Position(5,17)
FOR i=0 TO 2 DO
IF eye(i)<-10 THEN eye(i)=-10
ELSEIF eye(i)>10 THEN eye(i)=10 FI
Print(eye(i)): Put(' ')
DO Position(24,17)
IF eye(3)>208 THEN eye(3)=208
ELSEIF eye(3)<10 THEN eye(3)=10 FI
Print(eye(3)): Put(' ') RETURN

```

```

PRDC Umag(): Position(37,17): mag==+1
IF mag>9 THEN mag=1 FI: Print(mag): RETURN

```

```

PRDC Urot(): Position(12,18): Print(rx)
Put(' '): Print(ry): Put(' ')
Print(rz): Ph(12)
FixR(): FixM(): CLR(): Draw(P): RETURN

```

```

PRDC Uri(): Position(35,18)
Print(i): Put(' '): RETURN

```

```

PRDC Ucen( INT x,y): Position(8,19)
Print(x): Put(' ')
Print(y): Put(' '): RETURN

```

```

PRDC Ufoc( INT ARRAY v): BYTE i
Position(24,19)
FOR i=0 TO 2 DO Print(v(i)): Put(' ') DO
RETURN

```

```

PRDC Upt( INT n): Position(5,22): Print(n)
Put(' '): IF n<108 THEN Put(' ') FI
Position(38,22): Ph(8): RETURN

```

```

PRDC Uckyz( INT ARRAY pt): BYTE i
Position(15,22): PrintB(pt(3):3)
IF pt(3)<16 THEN Print(" LineTo ")
ELSE Print(" Plot ") FI

```



```

00 Ufoc(foc):RETURN

PROC JOVE(I:INT x,y,z
x:=eye(0):y:=eye(1):z:=eye(2)
00 st:=Stick(0):Ueye(I)
WHILE Strig(0)=0 00 st:=Stick(0)
eye(2)=+Jv(st):eye(3)=+Jx(st)
Ueye(I)
00
IF key=33 THEN key=255
FIXE():FixM():CLR():Oraw(P)
x:=eye(0):y:=eye(1):z:=eye(2)
ELSEIF key<255 THEN EXIT FI
eye(0)=+Jx(st):eye(1)=+Jv(st)
00 eye(0)=x:eye(1)=y:eye(2)=z:Ueye(I)
RETURN

PROC JOVC(I:INT x,y
IF cnow=0 THEN Kolor(I) FI
x:=cx:Y:=cy:bit(x,y)
00 st:=Stick(0):Ucen(x,y):bit(x,y)
IF key=33 THEN key=255
cx:=x:cy:=y:CLR():Oraw(P)
ELSEIF key<255 THEN EXIT FI
x:=+Jx(st):y:=+Jv(st):bit(x,y)
00 Ucen(x,y):RETURN

```

## LISTING 7

```

; DISKIO (LISTING 7)

MODULE:BYTE err
BYTE ARRAY fin(16),abort=" "

PROC MVErr(BYTE e)
Position(1,16):Print("MVErr=");
PrintB(e);err:=mes:=1;n21
Position(12,21):PrintB(e)
WHILE key=255 00 00 key=21:RETURN

PROC CIO:=SE456(BYTE a,x)

PROC IO2(BYTE cmd CARD buf,len)
BYTE IOcmd=866:;7-LOAD 11-SAVE
CARD IObuf=868,IOlen=872
IOcmd:=cmd:IObuf:=buf:IOlen:=len
CIO(0,32):RETURN

PROC OirC():BYTE i,j,1ft=02
BYTE ARRAY a(10),f(9)
1ft:=22:Position(22,3)
FOR i=1 TO 11 00 Pb(16):PutE(i) 00
Position(22,3):J=0
Close(2):Open(2,"0:M.V30",6,B)
FOR i=1 TO 22 00 Input5(2,a)
IF a(i)=16 THEN EXIT FI
SCOPY5(f,a,3,10):Print(f)
IF J=0 THEN J:=1:PutE(' ')
ELSE J:=0:PutE(' ')
00 Position(22,14):Print(a)
Close(2):1ft:=1:RETURN

PROC InP(BYTE ARRAY f):BYTE i
BYTE ARRAY a(10)
SCOPY(f,"01" " ")
Position(23,16):Pb(15)
Position(23,16):Input5(a)
i=a(0)+3:IF i>11 THEN i:=11 FI
SASign(f,a,3,10):SASign(f,".V30",i,14)
Position(23,16):Print(f):RETURN

```

```

WHILE key=255 00 00 k:=key:key=255
IF k<62 THEN Position(1,16):PutE('5')
Print(abort):RETURN
FI t:=Error:Error=MVErr:err=0
n:=0P(0)+10:Close(2):Open(2,fin,0,0)
IF err>0 THEN Close(2):Error=t:RETURN FI
IO2(11,P,n):IO2(11,C,5):Close(2)
Position(1,16):Print("SAVED ")
Error=t:OirC() RETURN

PROC LoadP():BYTE k:CARD n,t
Position(1,16):Print("LOAD ")
InP(fin)
Position(1,16):Print("L-LOAD ")
WHILE key=255 00 00 k:=key:key=255
IF k<0 THEN Position(1,16):PutE('L')
Print(abort):RETURN
FI t:=Error:Error=MVErr:err=0
Close(2):Open(2,fin,4,0)
IF err>0 THEN Close(2):Error=t:RETURN FI
IO2(7,P,2):In:=0P(0)+16
IO2(7,P+2,n):IO2(7,C,5):Close(2)
Position(1,16):Print(" ")
Error=t:Sei0fault():Open()
Position(30,19):Pb(6):RETURN

```

## LISTING 8

```

; PRINTIO (LISTING 8)

PROC Ppt(INT ARRAY v)
Print(2,"C"):PrintIO(2,v(0))
Print(2," ") :PrintIO(2,v(1))
Print(2," ") :PrintIO(2,v(2))
Print(2," ") :PrintIO(2,v(3))
Print(2," ") :RETURN

PROC Prnt():BYTE i,j,k:CARD n,t
BYTE ARRAY a(13),st(3,27,51,16)
,Pre=(4,27,75,192,0),s,d(193)
Position(1,16):Print("MPXMODE")
WHILE key=255 00 00 k:=key:key=255
IF k<10 AND k<05B THEN Position(1,24)
PutE('P'):Print(abort):RETURN
FI t:=Error:Error=MVErr:err=0
Close(2):Open(2,"P",0,0)
IF err>0 THEN Close(2):Error=t:RETURN FI
B(0)=12:SCOPY(a,b):SCOPY5(a,fin,3,14)
PrintOE(2," ") :PrintOE(2,a)
IF err>0 THEN Close(2):Error=t:RETURN FI
IF k=10 THEN st(3)=16:PrintOE(2,st)
s:=s+1:d(0)=192
FOR i=0 TO 39 00 n:=7640+i
FOR j=1 TO 192 00 d(j)=s(n):n:=n-40 00
PrintO(2,Pre):PrintOE(2,d)
00
ELSE st(3)=20:PrintOE(2,st)
PrintO(2,"eye="):Ppt(eye)
PrintO(2," focus="):Ppt(foc)
PrintOE(2," ") :i=0:j=0:n=p+10
00 i:=+1:IF i>P(0) THEN EXIT FI
J:=+1:n:=+0:Ppt(n)
IF J>2 THEN J:=0:PutOE(2) FI
00 PrintOE(2," ")
FI Position(1,16):Print(" ")
Error=t:Close(2):RETURN

```

## LISTING 9

```

; MENUDD (LISTING 9)

PROC MenuD():BYTE i,1ft=02:BYTE ARRAY a(1)
d1:=d12:5:=1:1st:=d1:d12:=d11st

```

continued on next page

[illegible]

### LISTING 10

```

: VIEW3D (LISTING 10)
:   by Paul Chabot
:   ANTiC Magazine

```

```
INCLUDE "D:GR78M.ACT"
INCLUDE "D:MISC1.ACT"
INCLUDE "D:COLOR5.ACT"
INCLUDE "D:DRAW3D.ACT"
INCLUDE "D:UPDATES.ACT"
INCLUDE "D:STICK3D.ACT"
INCLUDE "D:DISKID.ACT"
INCLUDE "D:PRINTIO.ACT"
INCLUDE "D:MENU3D.ACT"
```

```
PROC Setup():BYTE i
SetTrig():SetJxJy():SetBfault():FixP(0)
Gr700N():dl1=dlst:sa1=sa:ram=-33
Graphics(0):ram=+33:dl2=dlst:cur=1
```

```
CHON():Menu():Dir():URset():dlist=dll
MesA=lin20
RETURN
```

```

DD Minit:=BYTE k:setup()
DO WHILE key=255 DO DD k=key:key=255
dist:=d11:CPon()
IF k=31 THEN mes:=lin22 :1
JOVD()
ELSEIF k=30 THEN mes:=lin22 :2
CLR():JOVD()
ELSEIF k=26 THEN mes:=lin17 :3
JOVE()
ELSEIF k=24 THEN mes:=lin19 :4
JOVF()
ELSEIF k=20 THEN mes:=lin19 :5
JOVC()
ELSEIF k=50 THEN mes:=lin28 :6
UREset()
ELSEIF k=22 THEN mes:=lin10 :X
rx:=(rx+r1+360) MOD 360:Urot()
ELSEIF k=45 THEN mes:=lin10 :Y
ry:=(ry+r1+360) MOD 360:Urot()
ELSEIF k=23 THEN mes:=lin10 :Z
rz:=(rz+r1+360) MOD 360:Urot()
ELSEIF k=13 THEN mes:=lin10 :I
ri:=+1:IF ri>45 THEN ri:=45 FI:Uri()
ELSEIF k=1 THEN mes:=lin10 :J
ri:=+1:IF ri<45 THEN ri:=45 FI:Uri()
ELSEIF k=10 THEN mes:=lin23 :C
FXCO1()
ELSEIF k=16 THEN mes:=lin15 :V
Uvew():CLR():Draw(P)
ELSEIF k=37 THEN mes:=lin17 :M
Umag()
ELSEIF k=50 THEN dist:=d12 :D
CMon():Dir()
ELSEIF k=0 THEN mes:=lin16 :L
LoadP():Uvev():Uroc(roc):FixE()
FixM():CLR():Draw(P):mes:=lin20
ELSEIF k=62 THEN mes:=lin16 :5
SaveP():mes:=lin20
ELSEIF k=61 THEN mes:=lin15 :G
Ugr()
ELSEIF k=10 THEN mes:=lin16 :P
Print():mes:=lin20
ELSEIF k=33 THEN mes:=lin20 :SPACE
CLR():Draw(P)
ELSE dist:=d12:CMon()
FI

```

enhance your picture details like NASA does!

# PIXEL SCANNER

Article on page 14.

### LISTING 1

Don't type the  
TYPO II Codes!

```

HY 10 REM GTIA PIXEL AVERAGING
GN 20 REM BY LYN BUCKMAN
FU 30 REM (C) 1985, ANTIC PUBLISHING
ML 40 GOTO 300

IK 100 REM PIXEL AVERAGING ROUTINE
NM 110 REM SET AREA TO BE ENHANCED
V5 111 REM Y-COORDINATE RANGE
VP 112 FOR Y=1 TO 80
V6 113 REM X-COORDINATE RANGE
EL 114 FOR X=1 TO 77
F5 115 REM STOP ATTRACT MODE

```

```

JR 116 PORE 77.0
5N 120 REM LOCATE EACH PINEL AND ASSIGN I
    TS VALUE TO A VARIABLE
ON 121 LOCATE N-1,Y-1,A
KP 122 LOCATE N-1,Y,0
OZ 123 LOCATE N-1,Y+1,C
JF 124 LOCATE N,Y-1,0
NF 125 LOCATE N,Y,C
JR 126 LOCATE N,Y+1,F
NV 127 LOCATE N-1,Y-1,G
OL 128 LOCATE N-1,Y-1,G

```

```

IN 129 LOCATE M+1,V+1,I
CG 130 REM AVERAGE ALL PIXEL VALUES
HG 131 K=INT((A+B+C+D+E+F+G+H)/9)
YF 132 REM LIGHTEN THE BACKGROUND
YL 133 IF K=0 THEN K=0
OF 140 REM REPEAT PIXEL IN NEW COLOR
GO 141 COLOR K:PLOT X,Y+95
WA 150 REM RETURN FOR THE NEXT PIXEL
US 151 NEXT M:NEXT Y
OC 160 REM LOCK SCREEN IN GR-9 MODE
GP 161 POKE 77,0: SOUND 8,65,14,14: GOTO 16
1
SF 199 REM
RM 200 REM DRAW STICK FIGURE BIRD
KK 201 GRAPHICS 9:POKE 712,144
EN 210 REM DRAW TAIL
OY 211 FOR M=1 TO 15:COLOR M:PLOT 15+M,75
:ORANTO 5+M/4,71-M/2:NEXT M
IK 220 REM DRAW BODY
SJ 221 FOR M=16 TO 4 STEP -1:COLOR M:PLOT
15+M/8,6,74-M/8:ORANTO 68-M/1,8,74-M
VZ 222 PLOT 15+M/8,6,66-M/8:ORANTO 68-M/1,8
,66-M:NEXT M
BE 230 REM DRAW WINGS
VP 231 FOR M=1 TO 16:COLOR M:PLOT 4,63:OR
ANTO 10+M,10-M/2:ORANTO M+20,66-M/4:
ORANTO M+24,66-M/4
BJ 232 ORANTO 46+M,28-M/2:ORANTO 75,45:NEXT
M
BL 240 REM DRAW HEAD
LM 241 COLOR 11:FOR M=1 TO 22:PLOT 40+M/2
,68-M/2:ORANTO 68-M/6,68-M/2:NEXT M
RM 250 REM DRAW BEAK
US 251 COLOR 15:FOR M=1 TO 5:PLOT 73,67:O
RANTO 40+M,67-M:NEXT M:FOR M=1 TO 15:P
LOT 49+M/2,67:ORANTO 75,55:NEXT M
KN 260 REM DRAW EYE
RY 261 COLOR 8:FOR Y=54 TO 56:PLOT 60,Y:O
RANTO 62,Y:NEXT Y
LV 270 GOTO 100
SG 299 REM
SR 300 GRAPHICS 8:POKE 710,20:POKE 712,20
:POKE 709,2
OY 381 ? 17 17 , "DRAWING THE STICK FIGURE BIRD":?
" BY LYN SUTHERLAND"?
NR 382 ? "This demo program draws a stick
-figure bird using normal PLOT and ORAN
TO"
ZI 383 ? "Commands: Then the program 'co
mputer enhanced' the image by sampling
the"
YR 384 ? "Color value of each pixel, and"
"? "overriding it with the values of th
e surrounding pixels."?
SO 385 ? "The BASIC routine is slow (take
s about 12 minutes), but the results ar
e worth the wait."?
ZK 386 POKE 752,1:POSITION 12,22:?"READY
? PRESS ":POKE 53279,8
VN 328 IF PEEK(53279)<26 THEN 328
SO 330 POKE 53279,0:GOTO 200

```

## 10 DISKS FOR \$9.95

When we had the rare chance to buy some of the best quality disks on the market for an unheard of low price, we jumped at it. Now we can pass that low price directly on to you.

WORKS ON  
ANY IBM OR  
COMPATIBLE DISK DRIVE

### The best quality disks you can buy at the lowest conceivable price!

When we discovered that a well-known software company was going out of business and had to liquidate their stock of high quality disks, we couldn't resist! So we tested samples, and discovered that they were as good as we hoped they would be. High quality single sided, double density media, produced by one of the leading manufacturers.

Here's the catch. These aren't your standard old, black disks. In fact, they're really bizarre. On the outside—the superficial, visual side of the disk—these are unique. These disks were printed in a beautiful 4-color process, with the original intention of containing TechnoPop hits and Christmas hits from Waveform, Inc. The first features a corny Christmas scene complete with Santa, Rudolph, and a snow-covered cabin with a chimney. The second looks like a 45 rpm record with mod

new-wave graphics. You know, these disks were such a welcome change that the Antic staff now uses them exclusively.

### FOR THE SOPHISTICATED DISK USER

Since this is the best disk price anywhere, the supply won't last long. What do you get with your order? The disks and disk envelopes. You provide your own labels and write-protect tabs.

Arcade #DD010 10 DISKS \$9.95 + \$3 shipping/handling  
Arcade #DD050 50 DISKS \$44.95 + \$5 shipping/handling  
Arcade #DD100 100 DISKS \$79.95 + \$7 shipping/handling

### PLACE YOUR ORDER TODAY

Use the handy order form in the Arcade catalog.  
Credit card orders call 800-227-1677 (ext. 133)  
in California 800-772-3545 (ext. 133)

**Antic**



```

VT 940 POKE 54200,0:GRAPHICS 0:POKE 07,11
:POKE 623,192:POKE PEEK(560)+256:PEEK(
561)+166,143:NESTORE
WP 950 ADDR5=1536:POKE 54206,64:FOR K=0
TO 10:READ P:POKE ADDR5+K,P:NEXT K:P=
INT(ADDR5/256):POKE 515,P
WX 960 POKE 512,ADDR5-256:P:POKE 54206,1
92:DATA 72,178,131,2,41,63,141,10,212,
141,27,280,169,0,143,26,200,104,64
ZY 970 RETURN
HM 980 REM MENU
KG 990 GRAPHICS 2+16:POSITION 1,5:?"M6:"
:?"M7"
OP 1000 FOR O=1 TO 500:NEXT O
VB 1010 GRAPHICS 0:POKE 752,1:POKE 710,21
0
KZ 1020 POSITION 0,0:?" " MENU
"17
AL 1030 ? " 1 CREATE NEW MEAVING"
AA 1040 ? " 2 SAVE MEAVING"
KZ 1050 ? " 3 LOAD OLD MEAVING"
KF 1060 ? " 4 LEAVE PROGRAM"
KI 1070 ? " ? Selection 7"
II 1080 CLOSE #1:OPEN #1,4,0,"K:"
NO 1090 GET #1,K:IF K<49 OR K>52 THEN 101
0
IN 1100 A=K-40
XJ 1110 ON A GOSUB 00,1100,1200,010
NY 1120 GOTO 1010
ZY 1130 REM SAVE PATTERN
HM 1140 ? " ? Save to: 1..CASSETTE
2..DISKETTE"
PS 1150 GET #1,K:IF K<49 OR K>50 THEN 114
0
ZO 1160 ON K-40 GOTO 1170,1200
IM 1170 ? " ? Place tape in recorder:?"
Press RECORD and PLAY:?"Then type M6
RETURN"
NO 1180 GET #1,K
KH 1190 OPEN #2,0,120,"C":GOTO 1210
RR 1200 ? " ? Insert diskette and pres
s M6:?"GET #1,K:OPEN #2,0,0,"O:ME
AVING"
VM 1210 ? " ? " ? "
LG 1220 A=INT(ROK/256):AOL0=ROK-A=INT(2
56
EY 1230 MOOE=PEEK(07)
LO 1240 IO=64:POKE IO+2,11:POKE IO+4,AOL
0:POKE IO+5,A=INT
UI 1250 POKE IO+0,4:POKE IO+9,30
MK 1260 JNK=USR(ROK("hhhhLUV")):32:CLOSE
#2
AV 1270 RETURN
EZ 1280 REM LOAD OLD PATTERN
HM 1290 ? " ? " ? "Load from: 1..CASSETTE

```

2..DISKETTE"

```

MM 1300 GET #1,K:IF K<49 OR K>50 THEN 130
0
OS 1310 POKE 752,1
FM 1320 ON K-40 GOTO 1330,1370
JH 1330 ? " ? "Insert and queue tape"
LC 1340 ? "Press M6:?"type M6:?"
HJ 1350 GET #1,K
MC 1360 OPEN #2,4,120,"C":GOTO 1420
MM 1370 ? " ? "Insert diskette and pres
s M6:?"
GV 1380 POKE 764,255
CK 1390 IF PEEK(764)<12 THEN 1390
FZ 1400 POKE 764,255
CK 1410 OPEN #2,4,0,"O:MEAVING"
OH 1420 ? " ? " ? "
AA 1430 GOSUB 950
LO 1440 A=INT(ROK/256):AOL0=ROK-A=INT(2
56
BO 1450 IO=64:POKE IO+2,7:POKE IO+4,AOL
0:POKE IO+5,A=INT
UP 1460 POKE IO+0,4:POKE IO+9,30
MR 1470 JNK=USR(ROK("hhhhLUV")):32:CLOSE
#2
YH 1480 POKE 712,ASC(CHR$(601,7601))
IE 1490 FOR N=700 TO 710:POKE N,ASC(CHR$(
60974,60974)):NEXT N:POKE 559,0
MT 1500 L00=1:POP :GOTO 90
ET 1510 REM ERASE MEAVING AND RESET
PU 1520 ? " ? ERASING OLD PATTERN"
IT 1530 FOR U=1 TO 40:CL0(U,0)="":CL10(U
,U,0)="":NEXT U
CK 1540 S05=" "S015=" "ICRS=" "
BM 1550 N=1:V=0:ET=4
OM 1560 FOR I=1 TO 15:N=1
LR 1570 FOR I=1 TO H
OB 1580 S05=CL0(I,I)
TW 1590 CL=ASC(5053)-64
KF 1600 FOR K=X TO H+1:5000 0,AND(1)=255
,10,0:COLOR CL:PILOT H,Y:ORAND0 H,ET:ME
HT H
YO 1610 SOUND 0,0,0,0:NEXT I
PH 1620 N=1:V=0:ET=4
LR 1630 FOR I=1 TO H
MC 1640 S05=CL0(I,I)
JF 1650 CL=ASC(5053)-64
FM 1660 FOR K=X TO H+1:5000 0,AND(1)=255
,10,0:COLOR CL:PILOT H,Y:ORAND0 H,ET:ME
EXT H
LR 1670 SOUND 1,0,0,0:NEXT I:V=ET+1:ET=V+
4
JU 1680 NEXT R
OH 1690 RETURN

```

type-in music construction software

# THE MUSICIAN

Article on page 37.

## LISTING 1

Don't type the  
TYPO II Codes

```

OF 10 REM THE MUSICIAN
NO 20 REM BY ARGEO GARMORA
FM 30 REM (C) 1985, AOTIC PUBLISHING
NR 40 SI=1:POKE 65,0:GOTO 2000
OC 50 IF PEEK(20) THEN 50
CM 60 A=PEEK(764):RETURN
VI 70 FOR I=1 TO 51:IF PITCH=ASC(50005(I,I)
33
VC 80 IF PITCH=255 THEN POKE C1,ASC(50005
(I+1,I+1)):POKE C2,ASC(50005(I+2,I+2))
JV 90 IF PITCH=255 THEN POKE C3,ASC(50005
(I+3,I+3)):I=I+3:NEXT I:GOTO 200
LM 100 IF PITCH=254 THEN POKE C1,0:POKE C
2,0:POKE C3,0:NEXT I

```

```

JT 110 IF PITCH=120 THEN SUBST=1:PITCH=PIT
CH=120:IF PITCH=125 THEN PITCH=120
OM 120 POKE C0,PITCH:POKE 20,R:IF PITCH=0
THEN 170
RJ 130 IF H>15 THEN H=15:G=1:G0500 210
NG 140 VP05=ASC(VP05(I,I)):IF VP05>131 AN
0 VP05<147 THEN VP05=VP05-120:P05ITION
X,VP05:?"M6:"M="X+1
OS 150 IF VP05>203 AND VP05<210 THEN VP05
=VP05-200:P05ITION H,VP05:?"M6:"M="X+1
H 160 POSITION H,VP05:?"M6:"M="X+1:P05ITION
H,VP05-1:?"M6:"M="X+1:P05ITION H,VP05-2:?"

```

continued on next page

ANTIC SOFTWARE LIBRARY \* 61

```

M6:1 "I:N=X+2
OG 170 TEMPO=ASC(ITS(1,13)+TEMP:60SUB 50:1
IF 50ST OR PITCH=0 THEN 50ST=0:NEXT I:G
OTO 200
UT 100 IF A<255 THEN POKE 764,255:IF A=2
0 THEN I=51
NM 190 POKE 53760,0:NEXT I
LS 200 G=0:POKE C1,0:POKE C2,0:POKE C3,0:
POKE C4,0:50ST=1:RETURN
GK 210 POKE 53277,0:NTS="M":M=51:SETCOLOR
4,0,0:C=1:SETCOLOR 0,7,4
TB 220 SETCOLOR 1,1,4:SETCOLOR 2,5,4:IGRA
PHIES 17:POKE 559,46:POKE 53277,3
PA 230 POKE 16,132:POKE 53274,112
TR 240 POKE 756,CNR05/256:POSITION 7,0:
? M6:"Play"
SK 250 POKE 53761,170:POKE 53763,160:POKE
53765,160:POKE 53767,160:POKE 53768,0
POKE 53775,51:IF G THEN RETURN
FY 260 POKE 53254,60:POKE 53255,100:POKE
53260,0:POKE 54279,PH05E:FOR L=704 TO
720:POKE L,60:NEXT L
LN 270 FOR L=53256 TO 53259:POKE L,3:NEXT
L:POKE 53240,60:POKE 53249,92:POKE 53
250,124:POKE 53251,156:IGOTO 70
JA 280 INPUT M1:TEMP=INPUT M1.51
LV 290 FOR I=1 TO 51:INPUT M1.CN05:SONGS(
1,I)=CN05:NEXT I
QE 300 FOR I=1 TO 51:INPUT M1.CN05:ITS(1,I
)=CN05:NEXT I:FOR I=1 TO 51
OS 310 INPUT M1.CN05:VP05(1,I)=CN05:NEXT
I:51=51:POKE 53762,0:POKE 53764,0:PO
KE 53760,0:RETURN
RL 320 POSITION 4,22:IF M6:" " "IOESCS:"
"NTFLAG=0:RETURN
IL 330 IF MOVEFLAG THEN POSITION KP05=1,Y
P05:IGOTO 360
KS 340 IF 50ST THEN POSITION KP05,VP05=2:
? M6:" "
VO 350 POSITION KP05,VP05=2:IF M6:" " "POSI
TION KP05,VP05
UF 360 IF SHARPFLAT=3 THEN ? M6:"/"
FP 370 IF SHARPFLAT=1 THEN ? M6:"^"
AD 380 IF SHARPFLAT=2 THEN ? M6:"^"
DD 390 IF MOVEFLAG THEN RETURN
FS 400 MOVEFLAG=1:KP05=KP05+1:RETURN
410 IF SHARPFLAT THEN GOSUB 330
LI 420 POSITION KP05,VP05=1:IF M6:" " "POSI
TION KP05,VP05=3
MF 430 ? M6:" " "POSITION KP05+1,VP05=1:IF
M6:" " "POSITION KP05+1,VP05=3:IF M6:" "
DD 440 IF SHARPFLAT THEN POSITION KP05=1,
VP05=1:IF M6:" " "POSITION KP05=1,VP05=1
:IF M6:" "
ZG 450 IF 50ST THEN POSITION KP05,VP05=3:
? M6:" "
UF 460 POSITION KP05,VP05=1:NTS="M"
ZC 470 IF NTTYPE<1 AND RFLAG=0 THEN POSI
TION KP05,VP05=1:IF M6:STEM20:" " "POSI
TION KP05,VP05=2:IF M6:STEM20:" "
Y6 480 IF NTTYPE=0 OR NTTYPE=6 OR NTTYPE=
3 THEN POSITION KP05+1,VP05=2:IF M6:STEM
MFLAGS
FK 490 IF NTTYPE=6 OR NTTYPE=3 THEN POSIT
ION KP05+1,VP05=1:IF M6:STEMMFLAGS
OL 500 IF NTTYPE=2 THEN POSITION KP05+1,Y
P05:IF M6:STEMMFLAGS
MC 510 IF OUT=1 THEN POSITION KP05+1,VP05
1:IF M6:" "
LN 520 IF 50ST THEN POSITION KP05,VP05=2:
? M6:" "
FA 530 IF RFLAG OR NTTYPE=1 THEN POSITION
KP05,VP05=1:IF M6:" " "POSITION KP05,Y
P05=2:IF M6:" "
NT 540 GOTO 320
OC 550 REM POLL JOYSTICK
GI 560 A=STICK(0):IF A=15 OR RFLAG THEN 5
90
OO 570 IF A=14 THEN IF VP05=4 THEN VP05=Y
P05=1:GOSUB 410:GOTO 550
Y0 580 IF A=13 THEN IF VP05=10 THEN VP05=
YP05=1:GOSUB 410:GOTO 550
XN 590 A=PEEK(764):IF A<255 THEN POKE 76
4,255:IGOTO 620
RN 600 IF STICK(0)=0 THEN 1020
PE 610 GOTO 550
OI 620 IF A=42 THEN POSITION 4,22:IF M6:" "
xvt y or A="":GOSUB 2490:GOTO 550
EF 630 IF A=46 THEN NTS=CN05(239):NTTYPE=
1:IOESCS="whole":RFLAG=0:GOTO 900
WN 640 IF A=8 THEN 50M6(51,51):CN05(254)
:51=51+1:POSITION 4,22:IF M6:" " "chord off
"IGOTO 550
FI 650 IF A=10 THEN 1700
MO 660 IF A=45 THEN GOSUB 1670:GOTO 550
IV 670 IF A=63 THEN GOSUB 1900:GOTO 1970
JA 680 IF A=0 THEN GOSUB 1900:GOTO 2010
FE 690 IF A=57 THEN NTS=CN05(239):NTTYPE=
2:IOESCS="half":RFLAG=0:GOTO 870
NE 700 IF A=40 THEN 940
JN 710 IF A=47 THEN NTS=CN05(140):NTTYPE=
4:IOESCS="quarter":RFLAG=0:GOTO 870
BO 720 IF A=53 THEN NTTYPE=0:STEMMFLAGS=CN
RS(224):IOESCS="eighth":EIGHTFLAG=1:RFL
AG=0:NTS=CN05(140):IGOTO 900
EN 730 IF A=27 THEN NTTYPE=5:STEMMFLAGS=CN
RS(224):IOESCS="sixteenth":RFLAG=0:EIGH
TFLAG=1:NTS=CN05(140):GOTO 900
CO 750 IF A=34 THEN OUT=1:IGOTO 900
GK 760 IF A=7 THEN GOSUB 1270:GOTO 550
G8 770 IF A=62 THEN 50ST=1:GOTO 900
JN 780 IF 54 THEN 51=1:FOR I=1 TO 3:50M
0,0,15,10,10:FOR 0=1 TO 0:NEXT 0:50M0
0,0,0,0:NEXT I
UF 790 POSITION 4,22:IF M6:" " "sons cleared:"
GOTO 810
PB 800 GOTO 820
KK 810 FOR I=1 TO 300:NEXT I:FIRSTIME=0:
GOTO 2120
MF 820 IF A=21 THEN SHARPFLAT=2:GOTO 900
NM 830 IF A=90 THEN SHARPFLAT=1:GOTO 900
KO 840 IF A=10 THEN GOSUB 210:FIRSTIME=0:
IGOTO 2120
MO 850 IF A=7 THEN GOSUB 550:GOTO 900
OR 860 IF A=35 THEN SHARPFLAT=3:GOTO 900
OK 870 IF EIGHTFLAG THEN POSITION KP05+1,
VP05=2:IF M6:" " "POSITION KP05+1,VP05=1
:IF M6:" "
CN 880 IF NOT OUT THEN POSITION KP05+1,Y
P05:IF M6:" "
MO 890 GOSUB 410:GOTO 550
LO 900 IF NTTYPE<1 THEN GOSUB 410:GOTO 5
50
FM 910 POSITION KP05,VP05=2:IF M6:" " "POSI
TION KP05,VP05=1:IF M6:" " "IF EIGHTFLAG
THEN POSITION KP05+1,VP05=2:IF M6:" "
OO 920 IF EIGHTFLAG THEN POSITION KP05+1,
VP05=1:IF M6:" " "IF NOT OUT THEN POSIT
ION KP05+1,VP05=1:IF M6:" "
GT 930 GOSUB 410:GOTO 550
CS 940 IF NTTYPE=4 THEN NTS="h"
FO 950 IF NTTYPE=2 THEN NTS="M":NTTYPE=9
NO 960 IF NTTYPE=8 THEN NTS="M"
MC 970 RFLAG=1:IF VP05=12 THEN GOSUB 410:
GOTO 550
UI 980 IF VP05=11 THEN 1010
FN 990 IF VP05<11 THEN FOR VP05=VP05 TO 1
1 STEP 1:GOSUB 410:NEXT VP05
OO 1000 GOTO 550
NU 1010 FOR VP05=VP05 TO 13 STEP -1:GOSUB
410:NEXT VP05:GOTO 550
OC 1020 NM=(VP05=4)+4*(VP05=5)+7*(VP05=6)
+13*(VP05=7)+19*(VP05=8)+25*(VP05=9)+32
0*(VP05=10)+34*(VP05=11)+40
LI 1030 NM=NM+(VP05=12)+43*(VP05=13)+49*
(VP05=14)+55*(VP05=15)+61*(VP05=16)+64*
(VP05=17)+70*(VP05=18)+76
SC 1040 IF SHARPFLAT=1 THEN NM=NM-3
OO 1050 IF SHARPFLAT=2 THEN NM=NM-3
TN 1060 IF SHARPFLAT=3 THEN SHARPFLAT=0
OM 1070 IF RFLAG THEN SOUND 0,10,0,10:GOT
O 1090
NM 1080 SOUND 0,VAL(SCALES*(NM,NH+23)),10,1
0
MH 1090 FOR I=1 TO 50:NEXT I:50M0 0,0,0,
0:TEMP0=100:IF OUT THEN TS(51+1,51)=3:
"
OM 1100 TEMPO=120*(NTTYPE=1)+60*(NTTYPE=2
)+50*(NTTYPE=4)+15*(NTTYPE=8)+7*(NTTYPE
E=6)+3*(NTTYPE=3)

```

```

0W 1110 IF DOT THEN TEMPO=TEMPO+1.5
0X 1120 PITCH=VAL(CSCALE*LN,NH+23):IF SUS
T THEN PITCH=PITCH+10:IF PITCH>256 TH
EN PITCH=253
AJ 1130 SONGS(51)=CHRS(PITCH):TS(51,51)=C
HRS(TEMPO)
LV 1140 IF AFLAG THEN SONGS(51)=CHRS(0):D
OT=1:SU5T=0:05C5="quarter":NTTYPE=4
TC 1150 VP05(51,51)=CHRS(VP05):IF SHARPFL
W=1 THEN VP05(51,51)=CHRS(CASC VP05(51
,51))+120
05 1160 IF SHARPFL0T=2 THEN VP05(51,51)=C
HRS(ASC VP05(51,51))+200
AU 1170 REM MAKE NEW NOTE
JH 1180 SI=SI+1:POSITION 3,0:IF NT5=CHRS(
140) THEN NT5="a"
OI 1190 IF NT5=CHRS(259) THEN NT5="o"
ND 1200 STEM5=" " :STEM25=" " :STEMFLNGS="
" :IF FIRSTTIME=0 THEN FIRSTTIME=1:GOT
O 1220
HK 1210 GOSUB 110:TRAP 40000:IF AFLAG THE
N NT5="a":RFLAG=0
ED 1220 MOVEFLAG=0:5VENP05=HP05:HP05=HP05
+2:IF HP05>15 THEN SUBFL+1:HP05=5:GOSU
B 2130
MH 1230 IF 5VENP05=1 THEN 5VENP05=3
HN 1240 STEM5=CHRS(130):STEM25=CHRS(130)
:STEMFLNGS=CHRS(224):IF NT5="a" THEN N
T5=CHRS(140)
BR 1250 IF NT5="a" THEN NT5=CHRS(259)
PU 1260 DOT=0:SU5T=0:GOSUB 110:GOTO 550
AL 1270 POSITION 2,22:IF M61=" " ENTER CHOR
D " " :POSITION 2,23:IF M61=" " THEN PRES
S F E
TUP"
OT 1280 FOR I=1 TO 3:5OUND 0,15,10,10:FOR
0=1 TO 6:NEXT 0:5OUND 0,0,0,0:NEXT I
OH 1290 CWS=" " :OPEN M1,4,0,"K":POKE
702,0:CI=1:HP=HP05-1
ID 1300 A=PEEK(764):IF A=255 THEN 1300
GR 1310 GET M1,A:POKE 764,255:IF A=155 TH
EN 1470
ZM 1320 IF CI=6 THEN 1300
CM 1330 CHS(CI,CI)=CHRS(A)
LD 1340 IF CHRS(A)="#6" THEN CHS(CI,CI)="j"
:SI=SI+1
PM 1350 IF CHRS(A)="#7" THEN CHS(CI,CI)="y"
:SEVENTH=1
TC 1360 CHAS=CH9(CI,CI)
MU 1370 IF CHAS="a" THEN CHAS=CHRS(19):GO
OCHAR=1
MT 1380 IF CHAS="b" THEN CHNS=CHRS(10):GO
OCHAR=1
EM 1390 IF CHAS="m" THEN CHAS=CHRS(16):GO
OCHAR=1
AM 1400 IF CHAS="n" THEN CLOSE M1:POSITIO
N HP05-1,20:IF M62=" " :SECONDPA55=0:
GOTO 1630
HR 1410 IF CHAS="a" OR CHNS="b" OR CHAS="c"
OR CHNS="d" OR CHAS="e" OR CHNS="f" OR
CHAS="g" THEN 1450
VT 1420 IF (CHAS="m" OR CHAS="j") AND SEC
ONDPA55 THEN 1460
PJ 1430 IF (GOODCHAR OR SI=10 OR SEVENTH)
AND SECONDP55 THEN 1460
OS 1440 GOTO 1300
LP 1450 SECONDP55=1
BR 1460 POSITION HP,20:IF M61=CHAS:GOODCHAR
=0:CI=CI+1:HP=HP+1:GOTO 1300
NU 1470 CLOSE M1:POKE 702,64:SECONDP55=0
:CHAS=CHS(CI,CI)
NI 1480 NH=112+CHAS="c":+106+CHAS="d":+
100+CHAS="e":+97+CHAS="f":+91+CHNS="
g":+85+CHAS="a":+79+CHAS="b"
LV 1490 IF CI=2 THEN 051=12:052=21:GOTO 1
610
CV 1500 051=12:052=21:CI=2:IF CHS(2,2)="a"
OR THEN NH=NH-3:CI=3
TK 1510 IF CHS(2,2)="b" THEN NH=NH+3:CI=3

```

```

1,CI+1)=" " THEN 051=9:052=21
PA 1500 IF CHS(CI,CI)="m" THEN IF CHS(CI+
1,CI+1)="a" THEN 051=12:052=33
OM 1500 IF CHS(CI,CI)="m" THEN IF CHS(CI+
1,CI+1)="a" THEN 051=9:052=30
OE 1600 IF CHS(CI,CI)="m" THEN IF CHS(CI+
1,CI+1)="a" THEN 051=9:052=27
IO 1610 SONGS(51,51)=CHRS(259):SONGS(51+
1,51+1)=CHRS(VAL(CSCALE*LN,NH+23))
GT 1620 SONGS(51+2,51+2)=CHRS(VAL(CSCALE*
LN,051,NH+051+23)):SONGS(51+3,51+3)=C
HRS(VAL(CSCALE*LN,052,NH+052+23))
OR 1630 SI=10:SEVENTH=0:SI=SI+4:POSITIO
N 2,22:IF M61=" " :POSITIO
N 2,23:IF M61=" "
YM 1640 POSITION 7,22:IF M61=DESC:IF CHNS=
"m" THEN RETURN
LN 1650 5OUND 0,ASC(SONGS(51-3,51-3)),10,
10:5OUND 1,ASC(SONGS(51-2,51-2)),10,10
:5OUND 2,ASC(SONGS(51-1,51-1)),10,10
GT 1660 FOR I=1 TO 20:NEXT I:5OUND 0,0,0,
0:5OUND 1,0,0,0:5OUND 2,0,0,0:RETURN
VY 1670 FOR I=1 TO 3:5OUND 0,15,10,10:FOR
0=1 TO 6:NEXT 0:5OUND 0,0,0,0:NEXT I
CC 1680 POSITION 5,20:IF M61=" " :CHAS=TEMPO
:POSITION 5,22:IF M61=" "
MH 1690 POSITION 0,22:IF M61=CHRS(243):CHRS
(253):CHRS(259):CHRS(243):CHRS(229):C
HRS(242):TEMPO=0.25
LU 1700 A=STICK(0)
KV 1710 IF A=14 THEN POSITION 0,22:IF M61C
HRS(230):CHRS(225):CHNS(243):CHRS(244)
:CHRS(229):CHRS(242)
KD 1720 TEMPO=0.25:GOTO 1700
HS 1730 IF M=13 THEN 1690
HR 1740 IF STR(0)=0 THEN 1760
OH 1750 GOTO 1700
HO 1760 TEMP=TEMP+TEMPO:FOR I=1 TO 3:5OUN
D 0,15,10,10:FOR 0=1 TO 6:NEXT 0:5OUND
0,0,0,0:NEXT I
IJ 1770 POSITION 4,22:IF M61=" " :DESC:SI="
" :RETURN
OF 1780 SI=SI+1:FOR I=1 TO 3:5OUND 0,15,1
0,10:FOR 0=1 TO 6:NEXT 0
YO 1790 5OUND 0,0,0,0:NEXT I:POSITION 7,2
2:IF M61=" " :CHAS="c"
RO 1800 POSITION HP05,VP05-2:IF M61=" " :PO
SITION HP05,VP05-1:IF M61=" " :POSITION
HP05,VP05-1:IF M61=" "
AM 1810 IF SHARPFLAT THEN POSITION HP05-1
,VP05-1:IF M61=" "
IO 1820 IF SU5T THEN POSITION HP05,VP05+2
:IF M61=" "
OD 1830 HP05=5VENP05:IF SI=1 THEN 051=SI
UD 1840 IF SI=4 THEN 550
56 1850 IF ASC(SONGS(51-3,51-3))+255 THEN
SI=SI-4:POSITION 3,22:IF M61=" " :CHORD C
AN
FL 1860 FOR I=1 TO 100:NEXT I:POSITION 3,
22:IF M61=" "
SO 1870 GOTO 550
HR 1880 IF TS(51,51)="4" OR TS(51,51)="6"
OR TS(51,51)="8" OR TS(51,51)="8" THE
N STEMFLNGS="m"
VG 1890 GOSUB 320
LJ 1900 GRAPHICS 10:POKE 53277,0:POKE 559
,34:IF M61=" " ENTER SONG NAME"
EF 1910 OPEN M1,4,0,"K":FILNAMES="0":IX=
3:IF M61=" " :M61=" "
OG 1920 POKE 16,112:POKE 53774,112
OE 1930 GET M1,CH:IF CH=155 THEN CLOSE M1
:RETURN
CY 1940 IF CH=126 THEN POSITION (PEEK(05)
-13):(PEEK(04)):IF M61=" " :POSITION (PEE
K(05)-13):(PEEK(04)):IX=1:GOTO 1950
PM 1950 IF CHS(05)="a" OR CHRS(05)="z" T
HEN 1930
MO 1960 FILENAMES(IX)=CHRS(CH):IF M61=CHRS(
C H+120):IX=IX+1:GOTO 1930
FM 1970 IF LEN(FILENAMES)=2 THEN OPEN M1,
0,0,"C":FOR I=1 TO 120:PUT M1,CH:INENT
I:GOTO 1990
GU 1980 OPEN M1,0,0,FILENAMES

```

continued on next page

```

ZP 1990 ? M1:TEMP:=? M1:SI-1:FOR I=1 TO SI
  1:CHAS:=SOMG(I):? M1:CHAS:BEHT I:FOR
  I=1 TO SI-1:CHAS:=TS(I)
IK 2000 ? M1:CHAS:BEHT I:FOR I=1 TO SI-1
  CHAS:=YPO5(I):? M1:CHAS:BEHT I:CLOSE M1
  :FAS:TIME:=0:GOTO 2120
IT 2010 ? M1:TIME:=0:TRAP 2040
OO 2020 IF LEN(FILNAMES)-2 THEN OPEN M1,
  4,0,"C":IFOR I=1 TO 120:GET M1:CHIN:BEHT
  I:GOTO 2050
UT 2030 OPEN M1,4,0,FILNAMES:GOTO 2050
NM 2040 CLOSE M1:GOTO 2120
AV 2050 SI:=NTG:=M1:GOSUB 208:CLOSE M1:G
  050 M1:=FAS:TIME:=0:GOTO 2120
LK 2060 REM INITIALIZE SCREEN
  2070 DIM M1$13,STEM$13,STEM2$13,50
  N6$1000,TS(1000),YPO5(1000),SOMES(1
  2),FILNAMES(12)
HF 2080 DIM SCALES(117),STEMFLAGS(1),DESC
  5(15):DESC$="quarter":DIM CHS(5),CHAS(
  1)
PD 2090 SCALES="0200290510330350370400420
  4504705005057060064060872070081005091
  0961021001141211201301441515162175102"
YH 2100 CHAS$(1000)="195204217250243255":
  GOSUB 2200:TEMP:=1
VV 2110 CO=53760:CI=53762:C2=53764:C3=537
  66
GR 2120 NTG="M1:STEM1$=" M1:STEM2$=" M1:BEHT
  YPE:=4:DESC$="quarter":YPO5=12:XPO5=1
IP 2130 POKE 53277,0:GRAPHICS 17:SETCOLOR
  0,0,0:POKE 756,INT(CHROASE/256):POSET
  100,5,0:? M6:"The Musician"
CH 2140 POKE 16,112:POKE 53774,112
NM 2150 POSITION 7,22:? M6:DESC$+POKE 559
  4,0:POKE 53277,5:POKE 53254,60:POKE 53
  255,100:POKE 53260,0:POKE 623,4
CZ 2160 FOR I=CHROASE TO CHROASE+7:POKE I
  ,0:BEHT I:FOR L=704 TO 707:POKE L,120:
  BEHT L
KY 2170 FOR L=53256 TO 53259:POKE L,5:BEHT
  L:POKE 53240,60:POKE 53249,92:POKE 5
  3250,124:POKE 53251,155
GE 2180 IF SUMFL THEN SDFL=0:RETURN
SR 2190 GOTO 1190
PR 2200 GRAPHICS 17:P=57856:PMOASE=10T(1)
  PEEK(106)-123+2563(1024)+1024
S0 2210 CHROASE=10T(1)(PEEK(106)-10)+256)
  /1024-133+1024
CT 2220 POKE 16,112:POKE 53774,112
RD 2230 FOR I=1 TO 15:POSITION 5,I:? M6;"
  0200 00000000":BEHT I:? M6:? M6:? M6:"
  P=0,1,0"
MS 2240 DIM ES(76):FOR I=1 TO 76:READ A:E
  S(I)=CHR$(A):BEHT I
M0 2250 DATA 104,104,133,193,104,133,192,

```

```

104,133,197,104,133
OH 2260 DATA 196,109,226,133,195,109,R,13
  5,194,100,R,102,0,177,194,145
YF 2270 DATA 192,200,192,0,200,247,232,22
  4,5,240,10,250,193,250
OI 2280 DATA 195,100,0,109,0,240,232,162,
  0,100,0,109,0,145,100,200
IC 2290 DATA 192,0,200,249,232,224,5,240,
  0,100,0,250,197,100,0,240,236,96
IE 2300 M=USR$(HORSE),CHROASE,PMOASE:P=5
  7344+176:FOR I=CHROASE+176 TO CHROASE+
  103:POKE I,PEEK(P):P=P+1:BEHT I
VX 2310 P=57344+104:FOR I=CHROASE+104 TO
  CHROASE+191:POKE I,PEEK(P):P=P+1:BEHT
  I
VX 2320 P=57344+24:FOR I=CHROASE+120 TO C
  HROASE+135:POKE I,PEEK(P):P=P+1:BEHT I
  :P=57344+112
FI 2330 FOR I=CHROASE+96 TO CHROASE+103:P
  OKE I,PEEK(P):P=P+1:BEHT I:P=57344+100
OF 2340 FOR I=CHROASE+256 TO CHROASE+263:
  POKE I,PEEK(P):P=P+1:BEHT I
C0 2350 FOR I=CHROASE+00 TO CHROASE+07:RE
  AD A:POKE I,A:BEHT I:FOR I=CHROASE+64
  TO CHROASE+71:READ A:POKE I,A:BEHT I
UA 2360 FOR I=CHROASE+40 TO CHROASE+55:RE
  AD A:POKE I,A:BEHT I
NM 2370 START=PMOASE:PMOASE=PMOASE/256
MP 2380 FOR I=START+304+49 TO START+304+0
  1:POKE I,240:BEHT I
CD 2390 FOR I=START+512+49 TO START+640-4
  1 STEP 0:POKE I,255:FOR Z=I+1 TO I+7:P
  OKE Z,0:BEHT Z:BEHT I
NP 2400 FOR I=START+640+49 TO START+760-4
  1 STEP 0:POKE I,255:FOR Z=I+1 TO I+7:P
  OKE Z,0:BEHT Z:BEHT I
CP 2410 FOR I=START+760+49 TO START+890-4
  1 STEP 0:POKE I,255:FOR Z=I+1 TO I+7:P
  OKE Z,0:BEHT Z:BEHT I
OH 2420 FOR I=START+096+49 TO START+1024-
  41 STEP 0:POKE I,255:FOR Z=I+1 TO I+7:
  POKE Z,0:BEHT Z:BEHT I
SH 2430 POKE 15,INT(CHROASE/256):A=CHROAS
  E-(INT(CHROASE/256)+256):POKE 14,A
Y0 2440 POKE 54279,PMOASE:POKE 559,46:P
  OKE 53277,3
MT 2450 POKE 53760,0:RETURN
AC 2460 DATA 40,24,20,40,24,20,40,24
  0,2470 DATA 40,62,4,0,8,16,16,32
SK 2480 DATA 0,36,44,52,36,44,52,4
M0 2490 A=PEEK(764):IF A=255 THEN 2490
HE 2500 POKE 764,255:IF A<43 THEN POSITI
  ON 4,22:? M6:" " :RETURN
UM 2510 FOR I=1 TO 20:BEHT I
YZ 2520 M=USR$(04043)

```

let your joystick select program hues!

# COLOR PALETTE

Article on page 21.

## LISTING 1

Don't type the  
TYPE if Codes!

```

ZC 10 REM COLOR PALETTE
TP 20 REM BY JOHN W. FELTON
FW 30 REM (C) 1905, ARVIC PUBLISHING
JR 40 REM INITIAL COLORS
HT 50 DATA 40,202,140,70
PC 60 DATA 50,02,252,114,172,244,190,0
NO 70 REM DISPLAY LIST
CV 80 DATA 112,112,64,69,0,0,133,0,130,0,
  5,133,0,130,0,5,133,0,2,0,2,0,6,0,0,2,2
  ,2,2,2,0,0,0,0,0,5
EK 90 REM DISP. LIST INTERRUPTS
TU 100 DATA 72,173,200,2,69,79,37,70,141,

```

```

18,212,141,24,200,173,7,6,69,79,37,70,
  141,23,200,109,50,141,0,2,169,6,141
GR 110 DATA 1,2,180,64
OH 120 DATA 72,173,0,6,69,79,37,70,141,10
  ,212,141,22,200,173,1,6,69,79,37,70,14
  1,23,200,173,2,6,69,79,37,70,141,24
V5 130 DATA 200,173,3,6,69,79,37,70,141,2
  5,200,169,106,141,0,2,169,6,141,1,2,10
  4,64
AS 140 DATA 72,173,200,2,69,79,37,70,141,
  18,212,141,24,200,173,7,6,69,79,37,70,
  141,23,200,109,142,141,0,2,169,6,141

```



```

GZ 150 DATA 1.2,189.64
00 160 DATA 72.173,4.6,69.79,37.78,141.18
   212,141,22,280,173,5,6,69.79,37.78,14
   1,23,200,173,6,6,69.79,37.78,141,24
NZ 170 DATA 200,169,100,141,0,2,169,6,141
   1,2,189.64
BH 180 DATA 72.173,200,2,69.79,37.78,141,
   1,0,212,141,24,200,169,224,141,9,212,17
   3,7,6,69.79,37.78,141,23,200,189.64
BH 190 REM N=0 INTERRUPT
AL 200 DATA 169,14,141,0,2,169,6,141,1,2,
   76,95,228
05 210 DATA 104,160,219,162,6,169,6,32,92
   228,96
HG 220 REM SCROLL SUBROUTINE
NK 230 DATA 104,104,141,0,0,104,141,0,0,9
   6
MO 240 DATA GOV,GLD,ORANGE,RED,PINK,VIO
   LET,PURPLE,BLUE,CYAN,LT.BLUE,TROUBISE

KP 250 DATA BLUE-GRN,GREEN,YLLW-GRN,ORNG-
   GRN,LT. ORANGE
PF 260 DIM PMS(1824),SC9(700),C(12),CR5(4
   10),BLANK(10),ASC(20),BLKS(10),ROUTINES
   (10)
MT 270 REM TITLE PAGE
UO 280 POKE 106,PEEK(740)
EA 290 GRAPHICS 0:SETCOLOR 3,5,6:SETCOLOR
   0,14,10:POKE 710,0:POKE 752,1
PE 300 M=PEEK(560)+PEEK(561)+256+9:POKE H
   4,POKE H+1,6
MC 310 POSITION 6,4:?"*****"
   ""
FA 320 POSITION 10,10:?"BY"
GO 330 POSITION 13,12:?"JOHN W. FELTON"
CN 340 REM INITIALIZE
OK 350 RESTORE 100:FOR N=1550 TO 1770:REA
   B A:POKE N,A:NEXT N
OP 360 POSITION 11,20:?"(BACK IO A WOMEN
   T)"
IF 370 RESTORE 50:FOR M=1 TO 12:READ A:CE
   M:A:NEXT M
KJ 380 RESTORE 60:FOR M=0 TO 7:READ A:POK
   E 1536+M,A:NEXT M
MI 390 SC9(13)=?"":SC9(700)=SC9:SC9(2)=SC9
   (1)
Y0 400 PMBASE=256+PEEK(106)-03
MF 410 B5CH=INT(PMBASE/256/5):B5CL=0
PO 420 FOR N=96 TO 200:POKE PMBASE+N,PEEK
   (57344-B):NEXT N
IF 430 REM SET UP DISPLAY LIST
EA 440 GRAPHICS 17:POKE 559,0
LU 450 DL=PMBASE-256+4:SC9LOW=DL+22:SCRHI
   G=DL+23
BH 460 RESTORE 00:FOR N=0 TO 32:READ A:PO
   KE DL+A,A:NEXT N
BO 470 POKE SC9LOW,B5CL:POKE SCRHIGH,B5CH
   :POKE DL+33,PEEK(560):POKE DL+34,PEEK(
   561)
HK 480 POKE BL+4,PEEK(00):POKE DL+5,PEEK(
   00):POKE 560,BL-INT(COL/256)+256:POKE 5
   61,DL/256
RI 490 M=PEEK(00)+PEEK(00)+256+400:HIGH=I
   NT(C/256):LOW=N-HIGH+256:POKE BL+30,LO
   W:POKE DL+31,HIGH
GH 500 POKE 512,14:POKE 513,6:POKE 5206,
   192:POKE 1545,10
EE 510 REM INIT SCROLL SUBROUTINE
MM 520 RESTORE 20:FOR N=1 TO 10:READ A:R
   OUTINES(N)=CHR$(A):NEXT N
GU 530 HIGH=INT(5CLOW/256):LOW=5CLOW-HI
   GH+256:ROUTINES(0,B)=CHR$(LOW):ROUTINE
   S(0,9)=CHRS(HIGH)
YA 540 HIGH=INT(5CRHIGH/256):LOW=5CRHIGH-
   HIGH+256:ROUTINES(4,4)=CHRS(LOW):ROUTI
   NES(5,5)=CHRS(HIGH)
CH 550 A=USR(1760)
TI 560 REM SET UP P/M GRAPHICS
SF 570 VUTP=PEEK(134)+PEEK(135)+256
OF 580 STARP=PEEK(140)+PEEK(141)+256
JF 590 OFFSET=PMBASE-STARP
LC 600 HI=INT(OFFSET/256):LOW=OFFSET-HI+2
   56
NA 610 POKE VUTP+2,LOW:POKE VUTP+3,HI
ME 620 PMS(512)=?"":PMS(640)=PMS(512):PMS
   (513)=PMS(512)
OH 630 POKE 623,1:POKE 704,12:POKE 53256,
   1

```

continued on next page

```

TN 1210 S=STICK(0)/OH=(5)*4 AND 5<0)-(5)*8
AND 5<12):OV=(5)*5 OR 5=9 OR 5=13)-(5)*6
OR 5=10 OR 5=14)
ON 1220 POKE 16,112:POKE 53774,112:RETURN

GN 1230 REM SCROLL SUB
OB 1240 A=USR(ADR(ROUTINE),SCLOC):RETURN

PF 1250 REM SET TENT COLOR SUB
GV 1260 A=PEEK(7123)-INT(PEEK(7123)/16)*16:
POKE 1543,16-(R/9)+2:RETURN
ON 1270 REM WRITE HUC/LUM SUB
OR 1280 BV=INT(C(C)/16):LUM=C(C)-BV*16
JN 1290 Y=1+(C/4)+(C/8):H=C-INT(C-1)/4)+
4
HE 1300 POSITION H=10-9-(BV/9),Y=3-1-? "
"BY?":GOTO 1310
IO 1310 POSITION H=10-6,Y=3-1-? LUM:" "
AN 1320 POSITION H=10-3,Y=3-1-? IF C(C)<99
THEN ? " ":IF C(C)<10 THEN ? " "
NN 1330 ? C(C):RETURN
UD 1340 REM BEEP SUB
OF 1350 SOUND 0.5,14.6:FOR N=0 TO 10:HEN
T N:SOUND 0.5,0.0:RETURN

```

## LISTING 2

```

10 : COLOR PALETTE INTERRUPTS
20 : JOHN M. FELTON
30 : (C) 1985, ANTIC PUBLISHING
40 :
50 ORKMSK = 54E : ATTRACT MODE RE
OUCE LUMINANCE MASK
60 COLRSH = 54F : ATTRACT MODE CO
LOR SHIFT MASK
70 WSYNC = 5040A : WAIT FOR HORIZO
NTAL SYNCHRONIZATION
REGISTER
80 COLPF0 = 50016 : COLOR REGISTER
FOR PLAYFIELD ZERO
90 COLPF1 = 50017 : COLOR REGISTER
FOR PLAYFIELD ONE
100 COLPF2 = 50018 : COLOR REGISTER
FOR PLAYFIELD TWO
110 COLPF3 = 50019 : COLOR REGISTER
FOR PLAYFIELD THREE
120 COLOR4 = 502C0 : BACKGROUND COLO
R REGISTER SHADOW
130 VDSLST = 50200 : DISPLAY LIST IN
TERRUPT VECTOR
140 SVSVOB = 5E45F : STAGE ONE VERTI
CAL BLANK ENTRY
150 SETVOB = 5E45C : SET VERTICAL BL
ANK VECTOR ROUTINE
160 CHBASE = 50409 : CHARACTER BASE
ADDRESS
170 .ORG 50600 : POSITION ON PAG
E SIX
180 COLR0 .05 1 : DEFINE STORAGE
FOR DISPLAY COLORS
190 COLR1 .05 1
200 COLR2 .05 1
210 COLR3 .05 1
220 COLR4 .05 1
230 COLR5 .05 1
240 COLR6 .05 1
250 COLR7 .05 1
260 .05 4 : EXTRA STORAGE
270 :
280 : INTERRUPT #1
290 :
300 INT1 PHA : PUSH ACCUMULATO
R ON STACK
310 .LOA COLOR4 : LOAD BACKGROUND
COLOR
320 .EOR COLRSH : PERFORM ATTRACT

```

```

MODE OPERATIONS
330 .AND ORKMSK
340 .STA WSYNC : WAIT FOR HORIZO
NTAL BLANK
350 .STA COLPF2 : STORE IN GR.0 B
ACKGROUND COLOR REGISTER
360 .LOA COLR7 : LOAD DISPLAY CO
LOR SEVEN
370 .EOR COLRSH : PERFORM ATTRACT
MODE OPERATIONS
380 .AND ORKMSK
390 .STA COLPF1 : STORE IN GR.0 L
UMINANCE COLOR REGISTER
400 .LOA = <INT2 : LOAD ADDRESS OF
NEXT
410 .STA VDSLST : INTERRUPT INTO
THE
420 .LOA = >INT2 : DISPLAY LIST IN
TERRUPT
430 .STA VDSLST+1 : VECTOR
440 .PLA : POP ACCUMULATOR
OFF OF STACK
450 .RTI : RETURN FROM INT
ERRUPT
460 :
470 : INTERRUPT #2
480 :
490 INT2 PHA : PUSH ACCUMULATO
R ON STACK
500 .LOA COLR0 : LOAD DISPLAY CO
LOR ZERO
510 .EOR COLRSH : PERFORM ATTRACT
MODE OPERATIONS
520 .AND ORKMSK
530 .STA WSYNC : WAIT FOR HORIZO
NTAL BLANK
540 .STA COLPF0 : STORE IN COLOR
REGISTER ZERO
550 .LOA COLR1 : LOAD DISPLAY CO
LOR ONE
560 .EOR COLRSH : PERFORM ATTRACT
OPERATIONS
570 .AND ORKMSK
580 .STA COLPF1 : STORE IN COLOR
REGISTER ONE
590 .LOA COLR2 : LOAD DISPLAY CO
LOR TWO
600 .EOR COLRSH : PERFORM ATTRACT
OPERATIONS
610 .AND ORKMSK
620 .STA COLPF2 : STORE IN COLOR
REGISTER TWO
630 .LOA COLR3 : LOAD DISPLAY CO
LOR 3
640 .EOR COLRSH : PERFORM ATTRACT
MODE OPERATIONS
650 .AND ORKMSK
660 .STA COLPF3 : STORE IN COLOR
REGISTER THREE
670 .LOA = <INT3 : LOAD ADDRESS OF
NEXT
680 .STA VDSLST : INTERRUPT INTO
690 .LOA = >INT3 : DISPLAY LIST IN
TERRUPT
700 .STA VDSLST+1 : VECTOR
710 .PLA : POP ACCUMULATOR
OFF OF STACK
720 .RTI : RETURN FROM INT
ERRUPT
730 :
740 : INTERRUPT #3
750 :
760 INT3 PHA : PUSH ACCUMULATO
R ON STACK

```

```

0770  LDA COLOR4  : LOAD BACKGROUND
COLOR
0780  EOR COLRSH  : PERFORM ATTRACT
MODE OPERATIONS
0790  AND DRKMSK
0800  STA WSYNC   : WAIT FOR HORIZO
NTAL BLANK
0810  STA COLPF2  : STORE IN GR.0 B
ACKGROUND COLOR REGISTER
0820  LDA COLR7  : LOAD DISPLAY CO
LOR SEVEN
0830  EOR COLRSH  : PERFORM ATTRACT
MODE OPERATIONS
0840  AND DRKMSK
0850  STA COLPF1  : STORE IN GR.0 L
UMINANCE COLOR REGISTER
0860  LDA # <INT4 : LOAD ADDRESS OF
NEXT
0870  STA VDSLST  : INTERRUPT INTO
THE
0880  LDA # >INT4 : DISPLAY LIST IN
TERRUPT
0890  STA VDSLST+1 : VECTOR
0900  PLA        : POP ACCUMULATOR
OFF OF STACK
0910  RTI        : RETURN FROM INT
ERRUPT
0920 ;
0930 : INTERRUPT #4
0940 ;
0950 INT4 PHA    : PUSH ACCUMULATO
R ON STACK
0960  LDA COLR4  : LOAD DISPLAY CO
LOR FOUR
0970  EOR COLRSH  : PERFORM ATTRACT
MODE OPERATIONS
0980  AND DRKMSK
0990  STA WSYNC   : WAIT FOR HORIZO
NTAL BLANK
1000  STA COLPF0  : STORE IN COLOR
REGISTER ZERO
1010  LDA COLR5  : LOAD DISPLAY CO
LOR FIVE
1020  EOR COLRSH  : PERFORM ATTRACT
OPERATIONS
1030  AND DRKMSK
1040  STA COLPF1  : STORE IN COLOR
REGISTER ONE
1050  LDA COLR6  : LOAD DISPLAY CO
LOR SIX
1060  EOR COLRSH  : PERFORM ATTRACT
OPERATIONS
1070  AND DRKMSK
1080  STA COLPF2  : STORE IN COLOR
REGISTER TWO
1090  LDA # <INT5 : LOAD ADDRESS OF
NEXT
1100  STA VDSLST  : INTERRUPT INTO
1110  LDA # >INT5 : DISPLAY LIST IN
TERRUPT
1120  STA VDSLST+1 : VECTOR
1130  PLA        : POP ACCUMULATOR
OFF OF STACK
1140  RTI        : RETURN FROM INT
ERRUPT
1150 ;
1160 : INTERRUPT #5
1170 ;
1180 INT5 PHA    : PUSH ACCUMULATO
R ON STACK
1190  LDA COLOR4  : LOAD BACKGROUND
COLOR
1200  EOR COLRSH  : PERFORM ATTRACT
MODE OPERATIONS
1210  AND DRKMSK

```

```

1220  STA WSYNC   : WAIT FOR HORIZO
NTAL BLANK
1230  STA COLPF2  : STORE IN GR.0 B
ACKGROUND COLOR REGISTER
1240  LDA #SE0    : LOAD MSB OF ADD
RESS OF CHARACTER SET IN ROM
1250  STA CHBASE  : STORE IN CHARAC
TER SET BASE POINTER
1260  LDA COLR7  : LOAD DISPLAY CO
LOR SEVEN
1270  EOR COLRSH  : PERFORM ATTRACT
MODE OPERATIONS
1280  AND DRKMSK
1290  STA COLPF1  : STORE IN GR.0 L
UMINANCE COLOR REGISTER
1300  PLA        : POP ACCUMULATOR
OFF OF STACK
1310  RTI        : RETURN FROM INT
ERRUPT
1320 ;
1330 : VERTICAL BLANK INTERRUPT
1340 ;
1350 VBI LDA # <INT1 : LOAD ADDRESS OF
FIRST
1360  STA VDSLST  : INTERRUPT INTO
THE
1370  LDA # >INT1 : DISPLAY LIST IN
TERRUPT
1380  STA VDSLST+1 : VECTOR
1390  JMP SYSVBL  : JUMP TO OS VERT
ICAL BLANK ROUTINE
1400 ;
1410 : SET VECTOR TO VERTICAL BLANK IN
TERRUPT
1420 ;
1430  PLA        : DISCARD NUMBER
OF PARAMETERS PASSED IN BASIC CALL

```

continued on next page

#### SOUTHERN SOFTWARE

DIVISION OF SOUTHERN SUPPLY CO.

1079 Ruffner Rd., Birmingham, AL 35210

PHONE 205-956-0986

SEND SELF ADDRESSED STAMPED ENVELOPE FOR  
OUR TOP 20 SPECIAL BIRTH DAY SPECIALS EVERY YEAR

#### ALL THIRD PARTY SOFTWARE 30% OFF LIST PRICE

HAPPY ENHANCEMENTS	ATARI
810 ENHANCEMENT.....\$179.95	810 BL.....\$99.95
8200 ENHANCEMENT.....\$179.95	1030 RUBBER.....\$99.95
1000 MULTITERM.....\$99.95	1050 DISK DRIVE.....\$79.95
1050 CONTROLLER.....\$79.95	1060 RELIGER.....\$59.95
AXLON RAMPAKAPPE	1070 PRINTER.....\$79.95
1200 RAM BSA.....\$229.95	1080 FPL.....\$49.95
48K RAMPACK.....\$79.95	1090 TABLET.....\$59.95
32K RAMPACK.....\$49.95	890 INTERACE.....\$79.95
ICD INC.	890C KEY PAD.....\$49.95
SMART DOG.....\$49.95	TRAK BALL.....\$29.95
10 SMART.....\$49.95	ALARM SYSTEM.....\$29.95
CHIP FOR 850.....\$49.95	VERICA.....\$49.95
WAPP ARCHIVER.....\$75.00	SYNCH.....\$49.95
8-TIME CORRUPTOR.....\$59.95	ROM 11/.....\$49.95
ANYTHING NOT LISTED * * * * * CALL	CHORDEN.....\$49.95

ALL PRICES LISTED ARE FOR MAIL ORDERS ONLY. CREDIT CARD  
AND C.O.D. ORDERS APPROPRIATELY LOC. HOURS. DELIVER  
INQUIRIES WELCOME. SEND FOR OUR FREE BROCHURE AND PRICE  
LIST. ADD \$5.00 FOR SHIPPING, HANDLING AND INSURANCE.  
FORDON ORDERS WELCOME WITH SUFFICIENT POSTAGE INCLUDED.

#### SOUTHERN SOFTWARE

DIVISION OF SOUTHERN SUPPLY CO.

1079 Ruffner Rd., Birmingham, AL 35210

PHONE 205-956-0986

```

1440 LDY # <VBI ; LOAD Y WITH L50
OF INTERRUPT ADDRESS
1450 LDH # >VBI ; LOAD H WITH M50
OF INTERRUPT ADDRESS
1460 LDA #B ; LOAD ACCUMULATO

```

```

R WITH SIX FOR IMMEDIATE VBI
1470 JSR SETUBV ; CALL OS ROUTINE
TO SET VECTOR
1480 RTS ; RETURN FROM SUB
ROUTINE

```

fast graphic power from BASIC

# G.U.P. THE GREAT

Article on page 45.

## LISTING 1

Don't type the  
TYPO Code! 

```

K5 10 REM GUP.BAS
M5 20 REM BY BAREK MIHOCKA
F5 30 REM (C) 1985, ANTIC PUBLISHING
M5 40 DIM FMS(20),TEMS(20),ARS(95)
M5 50 ? "Output filename:":INPUT FMS:CLS
5=0
S5 60 IF FMS(1,1)="" AND (FMS(2,2)="" OR
  FMS(4,3)="" ) THEN DO
M5 70 TEMS(1,2)="" : TEMS(3,3)=FMS:FMS=TE
MPS
M5 80 TRAP 150
F5 90 ? " ? " : ? "Working... Please Stand by"

L5 100 RESTORE : READ LN:LN=LN+1:DIM AS(LN):
  C=1
BG 110 ARS="" : READ ARS
M5 120 FOR K=1 TO LEN(ARS) STEP 3:POKE 75
  2,255
DE 130 LN=LN+1:POSITION 10,10: ? "(Counto
  wa...T" : ? INT(LN/10) " "
DO 140 AS(C,C)=CHR$(VAL(ARS(K*2+3)):C=C+
  1:NEXT M:GOTO 110
KK 150 NUMH=INT(LN/256):NUMLD=LN-NUMH*2
  56
U5 160 OPEN #1:0,0,FMS
AD 170 AD=ADR(AS):AARI=INT(AD/256):ADL0=A
  D-ADH*256
RH 180 IO=0:ADH:POKE IO+2,1:POKE IO+4,AARD
  :POKE IO+5,ADH:POKE IO+6,NUMLD:POKE IO
  +9,NUMH
EF 190 K=USR(ADR("hhhhLVD")):CLS:CLOSE #1
M5 200 GRAPHICS 0 ? "*****GRAPHICS*****"
M5 300 DATA 1909
M5 1010 DATA 2552550000641040718700600710
  55071039065112065140065030067142064059
  060672069024000042070020071
FK 1020 DATA 04000710960712330722350720000
  00000039050035400040041035051000055052
  0410440410520570000000034057
TD 1030 DATA 000003603500037043000450410
  4004705004305300000000155203041007005
  2065170165200441003160189104
KF 1040 DATA 0640372071332200732550571420
  6413320516204224192176034165203160002
  2400009074136240005074136240
CZ 1050 DATA 0010741601091050711332141090
  41072133215172214032720005205145214096
  00000002552552550500000000
SS 1060 DATA 000000000000000000000000152400
  1524001524001524000520724525003207243
  2512171942233924725125254
LD 1070 DATA 1652211972032400441760001660
  1031422113320316522104030065133223165
  203045030065197223240069197
PD 1080 DATA 2032400231012091332240320730
  64230283165203197221400051972232400046
  1972242002371360000135207032
RY 1090 DATA 0750041652306241012091332030
  7005106523024200002730215165203145214
  165203024105209133203197223
DE 1100 DATA 2002351692551332070302730641
  652031972212400052302307603065096000
  104104104141110065104104133
KF 1110 DATA 2041041041332211041041332221

```

```

23110065197221144007166221142110065133
  221165204197222144006166222
EN 1120 DATA 1342041332221751100651332030
  321940623020416520419722200240173110
  065133203032194064006000000
IN 1130 DATA 000001041412000652302000652
  3020006517321200507210900007173210065
  072169000072173200065072104
BT 1140 DATA 074240219201001200003070730
  6414120006520620065104104133203104104
  133204133226076102065173210
JF 1150 DATA 0651332031732120051332041332
  210104141211006104133221141210065104104
  133222141212005032214065206
EM 1160 DATA 2000652002190900000000000000
  000001652219720420000307610064165221
  197203200003076253066176010
KE 1170 DATA 1662031342211332031652041642
  22135222132204132226165221056229203141
  203066072165204133226169000
TR 1180 DATA 14124007014121100651040160061
  41240070070203066230203066165222056229
  204176090072169001141211806
DR 1190 DATA 1040732550241050011412070661
  00000052214006072114207066173205066133
  142070661142070661
KN 1200 DATA 0000522140651732050661332101
  691201332251692306141050661411000606173
  2400724000502410221942210
PG 1210 DATA 1052191412130662010012000051
  65210141213066173211066240020165210073
  255133216065219073255133219
CF 1220 DATA 16919014131030661411600661732
  1306624002192327306402165225101210135
  225165226101219133226165204
CN 1230 DATA 1972262400702302041652041972
  2624001219722224000003073064230204076
  170000032073064165203197221
HI 1240 DATA 2100052302030761490065060000
  0000000000000000000000000000000056
  2320306600000462050660014207
GM 1250 DATA 0660420401440062372030660762
  400066109203066136200317370004109203066
  02406500000901652041972221
GH 1260 DATA 1440001642221332221322040320
  730641652041972224001230204032073064
  165204197222062450906104105
EG 1270 DATA 1041332308104104133231044332
  2513322610413322740236141203066169102
  141207066169000032214066072
FP 1280 DATA 16900001412070661732050661332
  19104032214066173205066133210169255133
  2301652250241012103133225165
DR 1290 DATA 2261012191332261700362260401
  0123062361652105062229036133204109170009
  14140041090000141207066162
PU 1300 DATA 000070146004144005024101221
  064102070662200624123431332291730624
  06024003716523002401229133
DH 1310 DATA 2211652300622929291332030321
  94064165231030241012363133024165230065229
  2291332032194064070000067
AU 1320 DATA 165256200051165231332041652
  300241012229133203032073064165230065229

```



```

IO 143 ? "23Flat"
IM 144 ? "35Sharp"?
IZ 145 TRAP 145:INPUT ACC:IF ACC<1 OR ACC
>3 THEN 145
MO 146 TRAP 40000:IF ACC=2 THEN TONIC=TON
IC+7
VI 147 IF ACC=3 THEN TONIC=TONIC+14
VU 150 GOSUB 1500
GM 150 ? "Pick a chord pattern"
EZ 170 ? "13HeJor"? "23Minor"? "327th"?
? "43Min 7th"?
BO 180 TRAP 180:INPUT CHORO
TI 190 IF CHORO<1 OR CHORO>4 THEN 100
FI 195 CHORO=CHORO-1:TRAP 40000
VY 200 RETURN
EK 500 GOSUB 600:LINE=N:N=N+CHORO
GI 505 POKE 752,1:RESTORE N
GU 510 POSITION 4,2:FOR F=1 TO 6:READ A:7
CHRS(A):" " :NEXT F:FRET=4
EJ 515 FOR F=0 TO 5:READ A:PATTERN(F)=A:N
EXT F
TE 520 FOR F=0 TO 5:FRET=FRET+2:RESTORE P
ATTERN(F)
CR 530 POSITION 4,FRET
JN 535 FOR I=1 TO 5:READ A:7 CHRS(A):" " :
NEXT I:READ A:7 CHRS(A)
EZ 540 NEXT F
OR 600 IF TONIC=05 THEN TONIC=72
NM 601 IF TONIC=79 THEN TONIC=73
NA 602 IF TONIC=74 THEN TONIC=66
PH 603 IF TONIC=61 THEN TONIC=75
AS 604 IF TONIC=62 THEN TONIC=76
WL 605 IF TONIC=77 THEN TONIC=69
VI 606 IF TONIC=64 THEN TONIC=70
OY 607 IF TONIC=68 THEN TONIC=67
MO 608 IF TONIC=63 THEN TONIC=70
UI 650 M=(TONIC-65)*100+2:R0000
AV 699 RETURN
OR 700 ? CHRS(K):
NA 701 IF ACC=2 THEN ? "H":
GH 702 IF ACC=3 THEN ? "M":
FK 703 IF CHORO=1 THEN ? "min":
VC 704 IF CHORO=2 THEN ? "H":
PH 705 IF CHORO=3 THEN ? "M?":
UI 706 ? " "
ZY 707 RETURN
JO 710 FOR N=2 TO 16 STEP 2:POSITION 20,N
+2:7 CHRS((M/2)+17):NEXT M:TONE=CHORO
HH 715 I=4:FOR N=4 TO 16 STEP 2
LI 720 POSITION 23,M:7 CHRS(TONES(I)+3):
OM 730 ? CHRS(TONES(I)+13):
OP 735 CHORO=TONES(I)+23:GOSUB 703:I=I+7:M
EXT N:CHORO=TONE
NP 799 POSITION 23,M:7 "MODERN":RETURN :R
EM USE INVERSE VIDEO FOR REST
HL 1500 ? "M":? "Y":? "P":POKE 752,0:7 :POKE
710,0:RETURN
MH 1555 FOR TIME=1 TO 200:NEXT TIME:RETUR
N
EZ 1560 TONIC=TONIC+1:K
PO 1561 IF CHRS(K)="5" THEN GOSUB 3000
SO 1562 IF K>40 AND K<56 THEN GOSUB 3100
UN 1563 IF K=0 THEN THEN 3200
OB 1565 IF K<27 THEN 1560
OE 1570 RETURN
LT 2000 DATA 1,19,19,19,19,19,4
OR 2001 DATA 1,19,19,19,20,4
AP 2002 DATA 1,19,20,20,20,19,4
TO 2003 DATA 1,19,20,20,20,4
NK 2004 DATA 20,20,20,20,20,20
FK 2005 DATA 1,19,19,19,20,4
OR 2006 DATA 1,20,20,19,19,4
GR 2007 DATA 20,19,19,19,19,20
HB 2008 DATA 1,19,19,19,20,20
IU 2009 DATA 1,20,19,19,19,4
JF 2010 DATA 20,19,19,19,19,4
ZK 2011 DATA 1,19,19,20,19,20
ZB 2012 DATA 1,19,19,19,20,4
GO 2013 DATA 1,19,19,20,19,4
AC 2014 DATA 1,19,20,19,20,4
NJ 2015 DATA 1,19,20,19,19,4
GC 2016 DATA 1,20,19,20,19,4
GI 2017 DATA 1,19,19,20,19,4
GU 2018 DATA 1,19,19,19,20,20
OD 2099 REM ABOVE 5015 UP ALL NEEDED
SHAPES FOR FINGER OUTS.
ZK 3000 REM SOUND NOTES INDIVIDUALLY
GY 3005 RESTORE LINE+99:FOR N=0 TO 4:READ
A:PATTERN(N)=A:NEXT N
UD 3010 SOUND 0,PATTERN(0),10,0:GOSUB 155
S
MO 3020 IF CHORO=1 OR CHORO=3 THEN SOUND
1,PATTERN(4),10,0:GOSUB 1555:GOTO 3040
MC 3030 SOUND 1,PATTERN(1),10,0:GOSUB 155
S
MH 3040 SOUND 2,PATTERN(2),10,0:GOSUB 155
S
GS 3050 IF CHORO=2 OR CHORO=3 THEN SOUND
3,PATTERN(3),10,0:GOTO 3060
TR 3055 SOUND 3,INT((PATTERN(0)/2)-0.5),1
0,0
SO 3060 GOSUB 1555:GOSUB 1555:FOR N=0 TO
3:5000 M,M,0,0:HEAT M:RETURN
CE 3100 REM PUT CHORDS INTO MEMORY
GS 3110 TONE=EK+493+7:RESTORE LINE+99
CC 3115 READ ONE,THREE,FIVE,SEV,MINTHREE:
TONE$(TONE)=ONE:TONE$(TONE+2)=FIVE
CR 3120 IF CHORO=0 OR CHORO=2 THEN TONE$(
TONE+1)=THREE:GOTO 3130
LF 3125 TONE$(TONE+1)=MINTHREE
IK 3130 IF CHORO=2 OR CHORO=3 THEN TONE$(
TONE+3)=SEV:GOTO 3140
PB 3135 TONE$(TONE+3)=INT((TONE/2)-0.5)
NM 3140 TONE$(TONE+4)=TONIC:TONE$(TONE+5)
=32
OA 3145 IF ACC=2 THEN TONE$(TONE+5)=90
BZ 3150 IF ACC=3 THEN TONE$(TONE+5)=35
OF 3155 TONE$(TONE+6)=CHORO
KE 3160 GOSUB 710:RETURN
MO 3200 REM PLAY CHORDS IN MEMORY
MT 3205 GOSUB 1500:GOSUB 710:POKE 752,1:7
"MODERN" TO STOP PLAYING:REM INVERSE
VIDEO FOR ESC
TG 3210 M=PEEK(764):IF M=20 THEN 3230
MS 3211 IF M=31 THEN K=0
IF 3212 IF M=30 THEN K=1
LN 3213 IF M=26 THEN K=2
LO 3214 IF M=24 THEN K=3
OV 3215 IF M=29 THEN K=4
OM 3216 IF M=27 THEN K=5
OI 3217 IF M=51 THEN K=6
OF 3218 IF M=35 THEN K=7
OO 3219 IF K=0 OR K>7 THEN THEN 3210
MJ 3220 TONE=K+7:IF TONE$(TONE)=32 THEN G
OSUB 3250:GOTO 3210
OM 3225 FOR N=0 TO 3:5000 M,M,TONE$(TONE+
N),10,0:NEXT M:GOTO 3210
OM 3230 FOR N=0 TO 3:5000 M,M,0,0:NEXT M
:RETURN
EF 19050 REM EXPLAIN THE FOLLOWING DATA I
FIRST 5HPRINT OUT M AND 05 ON TOP I
4,0,132 IS SPACE,00 IS N,79 IS 0
OM 19055 REM THE NEXT SIX ARE DATA LINES
TO READ SHAPES FOR EACH CHORD PATTERN.
4,0,2000 IS A FRET W/ NO FINGERS
MZ 19060 REM THE LAST LINE OF DATA IN A
SERIES LINES 20099,20199, etc.,3
SC 19065 REM ARE SOUND NUMBERS:TONIC,THIR
D,SEVENTH,MINOR THIRD.
MH 20000 DATA 00,79,32,32,32,79,2000,2003
,2000,2000,2000,2000
HM 20001 DATA 00,79,32,32,32,79,2001,2002
,2000,2000,2000,2000
JI 20002 DATA 00,79,32,32,79,32,79,2000,2014
,2000,2000,2000,2000
NG 20003 DATA 00,79,32,32,79,32,79,2001,2015
,2000,2000,2000,2000
MP 20009 REM A IN THIS ORDER:20000=MAJ3
20001=MIN:20002=7th:20003=mi7. 413
otherP(L,0,th, etc) are in same order.
MO 20099 DATA 144,114,96,01,121
LS 20100 DATA 00,32,32,32,32,32,2000,2004
,2000,2003,2000,2000
SI 20101 DATA 00,32,32,32,32,32,2000,2004
,2005,2002,2000,2000
PT 20102 DATA 00,32,32,32,32,32,2000,2004
,2000,2014,2000,2000
AR 20103 DATA 00,32,32,32,32,32,2000,2004
,2005,2015,2000,2000
SK 20199 REM 0
PE 20200 DATA 120,102,05,72,100
UE 20205 DATA 00,32,32,79,32,79,2001,2015

```

```

,2009,2000,2000,2000
UD 20201 DATA 00,32,32,32,32,32,2000,2000
,2004,2002,2000
ID 20202 DATA 00,32,32,32,32,79,2001,2015
,2016,2000,2000,2000
OY 20203 DATA 00,32,32,32,32,32,2000,2000
,2004,2005,2015,2000
5V 20290 REM C
B5 20299 DATA 121,96,01,60,102
MU 20300 DATA 00,00,79,32,32,32,2000,2011
,2012,2000,2000,2000
TH 20301 DATA 00,00,79,32,32,32,2000,2017
,2005,2000,2000,2000
MD 20302 DATA 00,00,79,32,32,32,2012,2011
,2000,2000,2000,2000
TR 20303 DATA 00,00,79,32,32,32,2000,2017
,2005,2000,2000,2000
TM 20390 REM D
RY 20399 DATA 100,05,72,61,91
PS 20400 DATA 79,32,32,32,79,79,2017,2000
,2000,2000,2000,2000
OY 20401 DATA 79,32,32,79,79,79,2000,2000
,2000,2000,2000,2000
CJ 20402 DATA 79,32,79,32,79,79,2017,2009
,2000,2000,2000,2000
SP 20403 DATA 79,32,79,79,79,79,2000,2009
,2000,2000,2000,2000
UA 20490 REM E
YI 20499 DATA 96,76,64,55,01
OH 20500 DATA 00,00,32,32,32,32,2010,2017
,2015,2000,2000,2000
KR 20501 DATA 32,32,32,32,32,32,2004,2000
,2000,2000,2000,2000
NJ 20502 DATA 00,00,32,32,32,32,2004,2017
,2009,2000,2000,2000
DA 20503 DATA 32,32,32,32,32,32,2004,2000
,2009,2000,2000,2000
UD 20590 REM F
RM 20599 DATA 91,72,60,50,76
VU 20600 DATA 32,32,79,79,79,79,2000,2009
,2007,2000,2000,2000
OD 20601 DATA 32,32,32,32,32,32,2000,2000
,2004,2000,2000,2000
MJ 20602 DATA 32,32,79,79,79,79,2000,2009
,2010,2000,2000,2000
UD 20603 DATA 32,32,32,32,32,32,2000,2000
,2004,2000,2000,2000
VC 20690 REM G
UD 20699 DATA 162,120,100,91,136
GT 20700 DATA 32,32,32,32,32,32,2000,2000
,2000,2004,2017,2000
OR 20701 DATA 32,32,32,32,32,32,2000,2000
,2000,2004,2000,2000
HM 20702 DATA 00,00,32,32,32,32,2003,2000
,2000,2000,2000,2000
HT 20703 DATA 32,32,32,32,32,32,2000,2000

```

```

,2000,2004,2000,2000
LH 20790 REM A0
GM 20799 DATA 153,121,102,05,120
LE 20800 DATA 00,32,32,32,32,32,2004,2000
,2005,2000,2000,2000
RA 20801 DATA 00,32,32,32,32,32,2004,2005
,2002,2000,2000,2000
OY 20802 DATA 00,32,32,32,32,32,2004,2000
,2014,2000,2000,2000
HZ 20803 DATA 00,32,32,32,32,32,2004,2005
,2015,2000,2000,2000
ML 20890 REM B0
OV 20899 DATA 136,100,91,76,114
EU 20900 REM C FLAT IS REFERRED TO 0
NATURAL
FM 20999 REM C FLAT NOTES ARE 0
OJ 21000 DATA 00,32,32,32,32,32,2000,2000
,2000,2004,2000,2005
MN 21001 DATA 00,32,32,32,32,32,2000,2000
,2000,2004,2005,2002
TE 21002 DATA 00,32,32,32,32,32,2000,2000
,2000,2004,2000,2014
FU 21003 DATA 00,32,32,32,32,32,2000,2000
,2000,2004,2005,2015
ML 21090 REM D0
YI 21099 DATA 114,91,76,64,96
MH 21100 DATA 00,32,32,32,32,32,2000,2000
,2004,2005,2015,2009
PG 21101 DATA 00,00,32,32,32,32,2000,2000
,2017,2014,2000,2000
HA 21102 DATA 00,00,32,32,32,32,2004,2005
,2011,2000,2000,2000
PL 21103 DATA 00,00,32,32,32,32,2015,2016
,2017,2000,2000,2000
MZ 21190 REM E0
UN 21199 DATA 102,05,60,57,91
PS 21200 REM F FLAT IS REFERRED TO E
JM 21299 REM F FLAT NOTES ARE E
ZL 21300 DATA 32,32,32,32,32,32,2000,2004
,2017,2000,2000,2000
ML 21301 DATA 32,32,32,32,32,32,2000,2004
,2000,2000,2000,2000
FJ 21302 DATA 32,32,32,32,32,32,2000,2004
,2017,2000,2000,2000
SJ 21303 DATA 32,32,32,32,32,32,2000,2004
,2000,2000,2000,2000
OR 21390 REM F0
UD 21399 DATA 173,136,114,96,144
KO 21400 REM A SHARP TS 0 FLAT
FF 21500 REM A SHARP TS C
MV 21600 REM C SHARP TS 0 FLAT
OF 21700 REM C SHARP TS E FLAT
JZ 21800 REM E SHARP TS F
DJ 21900 REM F SHARP TS G FLAT
LJ 22000 REM G SHARP TS A FLAT

```

## game of the month

# HELICOPTER ROUNDUP

Article on page 48.

## LISTING 1

Don't type the  
TYPE II code

```

IU 10 REM HELICOPTER ROUNDUP
ID 20 REM BY WALTER OBLANA
FM 30 REM (C) 1985, ANTIC PUBLISHING
UI 40 GDSUB 1550:REM GAME INITIALIZATION
NJ 50 GDSUB 1160:REM LEVEL INITIALIZATION

OV 60 5=STICK(0)
IT 70 POKE PHRASE+061:FUEL,F=126:FUEL=FUE
L-B.04:FUELCUSED=FUELCUSED-1
J5 80 POKE 16,112:POKE 53724,112:IF FUEL<
0 THEN 340
G5 90 SOUND 0,15,0,10

```

```

EC 100 HDIF=HIS-41:YDIF=V(5-4)
CF 110 HPD5=HPD5+4*HDIF:YDIF=HPD5+4*YDIF
LF 120 IF HPD5<40 THEN HPD5=40
TJ 130 IF HPD5>200 THEN HPD5=200
PL 140 IF YDIF<0 THEN YDIF=0
YV 150 IF YDIF>112 THEN YDIF=112
PD 160 SOUND 0,0,0,0:SPD=3,0,0,0
DZ 170 IF HDIF=-1 THEN PMD=PMH
EO 180 IF HDIF=-1 THEN PMD=PMH

```

continued on next page





```

OZ 1500 GOSUB 900:GOSUB 1090
MC 1570 HISCORE=0:MCMS=1
NO 1580 DIM PMMOVES(60):PRS(53):PLS(5):PC
  8(8):CPD55(60):CHNEMS(8)
SW 1590 DIM PH5(53)
YO 1400 DIM H(11):V(11)
YM 1450 MOVEFOR(PMMOVES):PMR=ADR(PRS):PM
  L=ADR(PLS):PMC=ADR(PC53)
DA 1420 PMR=ADR(PC53)
EE 1450 RESTORE 1440:FOR I=5 TO 15:READ #
  :H(I)=H:R(I)=R:V(I)=V:G=1:G=1
OO 1440 DATA 1,1,1,-1,1,0,0,0,-1,1,-1,-1,
  -1,0,0,0,1,0,-1,0,0
HY 1450 GRAPHICS 1:165:POKE 559,0
ZE 1460 PMBASE=INT((PEEK(160)-6)/4)+4
JC 1470 CHBASE=(PMBASE-2)*256
SK 1480 PMBASE=PMBASE+256
OM 1490 PRS(1)=CHRS(35):PRS(2)=CHRS(132):
  PRS(3)=CHRS(206):PRS(4)=CHRS(127):PRS(5)
  =CHRS(114)
IM 1500 PLS(1)=CHRS(240):PLS(2)=CHRS(33):
  PLS(3)=CHRS(115):PLS(4)=CHRS(254):PLS(5)
  =CHRS(112)
SO 1510 PC5(1)=CHRS(90):PC5(2)=CHRS(82):P
  C5(3)=CHRS(34):PC5(4)=CHRS(116):PC5(5)
  =CHRS(92):PC5(6)=CHRS(94)
YA 1520 PC5(7)=CHRS(162):PC5(8)=CHRS(163)
KE 1530 PH5(1)=CHRS(8):PH5(2)=CHRS(8):PH5
  (3)=CHRS(129):PH5(4)=CHRS(16):PH5(5)=CH
  RS(8)
OT 1540 REM ERASE P/M AND CHR MEMORY
VF 1550 RM=PEEK(89):RL=PEEK(88)
OA 1560 I=PEEK(186):POKE 186,I-6:POKE 89,
  PEEK(186)-8:POKE 88,0:?" "":POKE 89,8H
  :POKE 88,RL:POKE 186,I
RD 1570 POKE 559,8
NA 1580 REM P/M MOVE ROUTINE
MV 1590 RESTORE 1600:FOR I=1 TO 100:READ
  W:PMMOVES(I)=CHRS(W):NEXT I
HG 1600 DATA 216,184,104,104,133,213,104,
  24,185,2,155,200,104,133,205,104,133,2
  04,184,133,285,104,184,133,280
OB 1610 DATA 104,184,133,289,104,184,24,1
  81,289,133,287,166,213,240,16,165,205,
  24,185,120,133,205,165,206,105
TO 1620 DATA 0,133,200,202,200,240,160,0,
  162,0,196,209,144,19,195,207,176,15,13
  2,212,150,160,177,203,164
UL 1630 DATA 212,145,205,232,169,0,240,4,
  169,0,145,205,200,192,120,200,224,166,
  213,165,280,157,0,200,95
LG 1640 REM CHAR MOVE ROUTINE
OV 1650 RESTORE 1660:I=0
AO 1660 READ W:IF W=-1 THEN 1680
YU 1670 POKE 1536+I,W:I=I+6010:1660
HV 1680 CHNEMS="KVDMMHYZ"
NV 1690 FOR I=0 TO 511:POKE CHBASE+I,PEEK
  (5734+I):NEXT I
NT 1700 RESTORE 1740:Z=0
AR 1710 FOR I=1 TO 8
NV 1720 CHADD=CHBASE+CASC(CHNEMS(I)):I3=32
  :J=0
OD 1730 FOR J=0 TO 7:READ #:POKE CHADD+J,
  N:NEXT J:J=1
MG 1740 REM TREE TRUNK -K
FA 1750 DATA 24,24,24,24,24,24,24,24
KM 1760 REM TREE LEAVES-V
JC 1770 DATA 64,40,87,251,84,58,120,28
KD 1780 REM LANDING PAD-D
OR 1790 DATA 256,255,255,255,255,255,255,
  255
RJ 1800 REM REFUEL ZONE-W
MS 1810 DATA 251,251,251,0,0,251,251,251
NM 1820 REM FENCE -W
GC 1830 DATA 255,60,60,60,255,60,60,60
WM 1840 REM LEFT COM -H
AA 1850 DATA 64,192,255,63,63,17,17
OF 1860 REM CENTER COM -V
NK 1870 DATA 56,24,24,60,60,60,36,36
IN 1880 REM RIGHT COM -Z
OB 1890 DATA 2,5,255,252,252,136,136,136
WZ 1900 POKE 54279,INT(PMBASE/256):POKE 5
  3277,3
YP 1910 POKE 704,0:POKE 705,14:POKE 706,1
  86:POKE 707,252
RR 1920 FOR I=PMBASE+640 TO PMBASE+895:PO
  KE I,0:NEXT I

```

```

AP 1930 FOR I=PMBASE+602 TO PMBASE+733:PO
  KE I,129:NEXT I:POKE PMBASE+734,255:PO
  KE PMBASE+681,255
OO 1940 RETURN
AO 1950 REM COM MOVE ROUTINE
ER 1960 DATA 104,104,133,204,104,133,203,
  169
KU 1970 DATA 0,133,200,165,232,200,1,95
UG 1980 DATA 190,252,165,232,16,166,177,2
  83
VF 1990 DATA 133,219,200,177,203,133,220,
  32
VA 2000 DATA 145,6,165,230,133,207,165,21
  9
SO 2010 DATA 10,10,10,24,105,40,133,200
OV 2020 DATA 52,195,6,130,133,233,24,101
OL 2030 DATA 219,133,221,52,145,6,165,231
VC 2040 DATA 133,207,165,220,10,10,24,105
IC 2050 DATA 165,133,200,32,193,6,130,24
IA 2060 DATA 101,220,133,222,170,32,165,6
TK 2070 DATA 164,221,177,205,201,0,240,10
OK 2080 DATA 165,220,166,219,32,230,6,76
CS 2090 DATA 11,6,169,57,24,101,233,145
VI 2100 DATA 205,166,220,32,165,0,164,219
TO 2110 DATA 169,0,145,205,165,232,10,160
AU 2120 DATA 165,221,145,203,165,222,200,
  145
VF 2130 DATA 203,166,221,32,230,6,76,11
WU 2140 DATA 0,173,10,210,201,235,176,5
HC 2150 DATA 162,0,95,201,245,176,5,162
CY 2160 DATA 1,96,162,255,95,165,80,133
NU 2170 DATA 205,165,89,133,206,130,200,1
IO 2180 DATA 96,165,205,216,24,105,20,133
AO 2190 DATA 205,144,2,230,200,202,200,24
  1
NM 2200 DATA 96,173,10,210,41,31,133,205
OV 2210 DATA 165,207,24,197,206,176,13,16
  5
HO 2220 DATA 206,56,229,207,24,197,205,17
  6
CK 2230 DATA 2,162,1,96,229,206,24,197
ZM 2240 DATA 205,176,2,162,255,96,24,201
JR 2250 DATA 6,176,1,96,207,17,144,1
KL 2260 DATA 96,150,24,201,7,176,1,96
LU 2270 DATA 201,15,144,1,96,230,200,96
FN 2280 DATA -1

```

## End Program Typing Agony Forever!



**Antic Magazine +  
Disk Subscription**

**Instant Relief!  
Only \$99.95  
for 12 issues.**

See Subscription  
Insert for details.

# TURTLE PIANO

Article on page 10.

## LISTING 1

```

TO SIGN :LEN
TELL 10 1) PU
TELL 0 0K 6 TELL 1 FD 14
TELL 10 1) LT 90 FD :LEN / 2 - 10
END

TO STAFF :LEN :HIT
CS PU LT 90 FD :LEN / 2 RT 90 FD :HIT
  * 5 / 2 PD
REPEAT 4 [SETH 90 FD :LEN 0K :LEN RT
90 FD :HIT]
RT 180
REPEAT 2 [FD :HIT * 4 RT 90 FD :LEN R
T 90]
SIGN :LEN
END

TO MEASURE
CS
TELL 2 STAFF 250 10
END

TO DIRECTIONS
CT
PR [IF YOU WANT THE COMPUTER TO PLAY]
PR [ALONG WITH YOU, PRESS 'v' NOW.]
MAKE "CHOI RC
IF :CHOI = "Y [PR [THE COMPUTER WILL
PLAY ALONG.]] [PR [THE COMPUTER WILL
NOT PLAY.]]
PR [Press a key to go on.]
PR RC CLEANUP
END

TO SETUP
SETBG 0
TELL 2 SETPM 0 SETPE 0 102 SETC 15
TELL 10 1) SETC 6
TELL 10 1 2) CS
TELL 2 MEASURE
TELL 2 PU SETPDS [0 -20] SETC 15
PUTSH 1 :NDAT
PUTSH 2 :STAFFLO
PUTSH 3 :STAFFHI
TELL 0 SETSH 2 TELL 1 SETSH 3
TELL 2 SETSH 1
END

TO BEEP :NOTE
SETENV 0 3
TDDT 0 :NOTE 10 20
END

TO PLAY :ST
IF :ST = "A [TYPE [ \ C] SETY -20 DP 2
60.7]
IF :ST = "S [TYPE [ \ d] SETY -15 DP 2
93.3]
IF :ST = "O [TYPE [ \ e] SETY -10 DP 3
30]
IF :ST = "F [TYPE [ \ f] SETY -5 DP 34
7.7]
IF :ST = "G [TYPE [ \ g] SETY 0 DP 391
.1]
IF :ST = "H [TYPE [ \ a] SETY 5 DP 440
]
IF :ST = "J [TYPE [ \ b] SETY 10 DP 49
5]

IF :ST = "K [TYPE [ \ C] SETY 15 DP 52
1.5]
IF :ST = "L [TYPE [ \ D] SETY 20 DP 58
6.6]
IF :ST = "I [TYPE [ \ E] SETY 25 DP 66
0]
IF :ST = "+" [TYPE [ \ F] SETY 30 DP 69
5.4]
IF :ST = "M [TYPE [ \ G] SETY 35 DP 70
2.2]
IF :ST = CHAR 32 [TYPE [ \ ] SETY 0 DP
50000]
OP 50000
END

TO BEEP2 :NOTE
SETENV 0 3
TDDT 0 :NOTE 10 20
TDDT 1 :NOTE / 2 0 20
END

TO REMEM :ST
MAKE "LINE LPUT :ST :LINE
END

TO REPLAY :LINE
IF EMPTY :LINE [STOP]
IF :CHOI = "Y [BEEP2 PLAY FIRST :LINE
] [BEEP PLAY FIRST :LINE]
REPLAY OF :LINE
END

TO START
SETUP
BEEP2 PLAY "A
DIRECTIONS
GET :NOTE
END

TO CLEANUP
CT
PR [C\=CLEANUP, V\=START OVER, R\=REPLA
Y]
MAKE "LINE []
END

TO GET :NOTE
DEPOSIT 731 255
MAKE "ST RC
IF :ST = "C [CLEANUP GET :NOTE]
IF :ST = "Y [START]
IF :ST = "R [REPLAY :LINE GET :NOTE]
REMEM :ST
IF :CHOI = "Y [BEEP2 PLAY :ST] [BEEP
PLAY :ST]
GET :NOTE
END

MAKE "ST "R
MAKE "STAFFHI [0 12 10 9 9 9 9 9 9
9 9 9 10 12 0]
MAKE "STAFFLO [0 24 40 72 136 136 136
130 141 141 139 137 137 73 42 20]
MAKE "NDAT [0 7 15 12 0 0 0 0 0 104
240 240 240 96 0]
MAKE "CHOI "Y
MAKE "LINE [S O F \ F G H \ H J K \
K K K]

```

# TURBO TYPO II

Article on page 43.

## LISTING 1

```

MD 32000 MEM TYPO II BY ARDY BARTON
CM 32015 MEM TURBO TYPO REV. BY J.O. MCLAUGHLIN
UP 32016 MEM (C) 1985, ANTIC PUBLISHING
CI 32025 OIM 051753
ZS 32026 BS="MCLAGHLIN"
PH 32150 A05=000(A0R(05),A0R(LINE0),LEN(L
I0E5)) :A05=PEEK(1709)+256*PEEK(1790)+6
5536*PEEK(1791)

```

## LISTING 2

```

SH 10 MEM CREATE LINE 32026 FOR TURBO TYP
0
CH 20 MEM BY J.O. MCLAUGHLIN
FM 30 MEM (C) 1985, ANTIC PUBLISHING
LS 40 GRAPHICS 0
RT 50 RESTORE :POSITION 2,617 "32026 BS="
:CH05(34):
IE 60 POKE 766,1
CZ 70 FOR I=1 TO 71:HEAD A
HE 00 ? CHR$(A)I
GG 90 BENT I/POKE 766,0
GL 100 POSITION 2,1117 "CONT":POSITION 2,
Z:POKE 042,131510P
NR 110 POKE 042,1217 "LINE 32026 HAS BEEN
CREATED":600
FL 120 DATA 169,1,133,203,104,104,133,205
,104,133,204,104,104,133,207,169,0,141
,253,6,141,254,6,141
PO 130 DATA 255,6,160,0,165,203,133,200,1
77,204,133,206,24,165,206,109,253,6,14
1,253,6,144,11,230
KM 140 DATA 254,6,173,254,6,200,3,230,255
,6,190,200,200,250,200,230,203,190,207
,200,230,96,84

```

## LISTING 3

```

05 : TURBO TYPO
06 : BY J.O. MCLAUGHLIN
07 : (C) 1985, ANTIC PUBLISHING
10 == 50600
20 BASIC1 = 1709 :FIRST
30 BASIC2 = 1790 :SECOND AND
40 BASIC3 = 1791 :THIRD BYTES OF A
NS FROM BASIC PROGRAM
50 LDA #1
60 STA SCB :ESTABLISH COUNT
R (TYPOII'S VARIABLE C)
70 PLA :DISCARD HOF BYTE
S PASSED
90 PLA
90 STA SCB :HI BYTE OF ADDR(L
INE9)
100 PLA
110 STA SCC :LO BYTE OF ADDR(L
INE9)
120 PLA :BASIC ALWAYS PAS
SES A 0 HERE AS HI BYTE OF LEN(LINE)
130 PLA
140 STA SCF :LO BYTE OF LEN(L
INE9)
150 LDA #0
160 STA BASIC1 :ZERO ALL
170 STA BASIC2 :BYTES OF
180 STA BASIC3 :ANS
190 LDY #0 :SET COUNTER

```

```

0200 LOOPA LDA SCB :GET VALUE OF 'C'
0210 STA 500 :USE AS A COUNTER
0220 LDA (SCC),Y :GET CHARACTER FR
OM LINE5
0230 STA SCE
0240 LOOPB CLC :LOOPB *MULTIPLY
5* CHAR. BY 'C'
0250 LDA SCE
0260 ADC BASIC1
0270 STA BASIC1
0280 ORC ONW
0290 INC BASIC2
0300 LDA BASIC2
0310 BNE ONW
0320 INC BASIC3
0330 ONW DEC 500
0340 BNE LOOPB
0350 INY
0360 INC SCB :SAME AS C=C+1
0370 DEC SCF :REDUCE NUMBER OF
CHAR.5 REMAINING
0380 BNE LOOPA :ALL CHARS. PROC
5507
0390 RTS :YES, THEN RETURN

```



Tired of always searching for the right recipe?  
Are the prices of your recipe books covered with your recipe ingredients?  
Fed up at guessing amounts when a recipe serves five but you want it for two?  
If so then you need **The Computer Gourmet**.

With **The Computer Gourmet** you can

- Easily save your favorite recipes (even give them a rating!)
- Find any recipe you need within seconds
- Adjust for a different serving size automatically
- Print the whole recipe or just the list of ingredients

Best of all, **The Computer Gourmet** comes with a disk full of recipes!  
(With everything from main courses to desserts!)

Available on disk for Atari<sup>®</sup> computers (Inquire 48K). To order, send \$29.95 plus \$7.00 for postage (New residents please add \$5.00). Sales tax to:

New Horizons Software • P.O. Box 180253 • Austin, Texas 78718

Or for more information, call (512) 440-1767

**New Horizons**  
Expanding Your Life

Please write to us for information on all of our products for Atari computers.  
Circle numbers in order. Write us a trademark of Atari Corp.

## LISTING 2

Don't type the  
TYPO II Codes!

```

00 10 REM GRAPHICS UTILITY PACKAGE REMO
02 20 REM BY RAREK MIHOCKA
04 30 REM (C) 1985, ARMC PUBLISHING
06 40 START=16384
08 42 IF PEEK(START)=76 THEN 50
10 44 POKE 716,64:?"*4" G.U.P. Machine
12 46 LANGUAGE ROUTINES ARE NOT IN MEMORY
14 48
16 4C 7 17 " THIS DEMO CANNOT RUN WITH
18 4E THEORETICALS. SEE ARTICLE FOR AD
20 4F ADDITIONAL INFORMATION." :END
22 50 REM=PEEK(START+3)+256*PEEK(START
24 52 +4)
26 54 REM=PEEK(START+5)+256*PEEK(START+6)
28 56
30 58 LET DRAWN=PEEK(START+7)+256*PEEK(
32 5A START+8)
34 60 LINE=PEEK(START+9)+256*PEEK(START+1
36 62 0)
38 64 CIRCLE=PEEK(START+11)+256*PEEK(START
40 66 +12)
42 68 LET CLRR=PEEK(START+13)+256*PEEK(
44 6A START+14)
46 70 LET GRAPHICS=PEEK(START+15)+256*PE
48 72 EK(START+16)
50 74 C12R=PEEK(START+17)+256*PEEK(START
52 76 +18)
54 78 C12F=PEEK(START+19)+256*PEEK(START
56 80 +20)
58 82 TENT=PEEK(START+21)+256*PEEK(START
60 84 +22)
62 86 LET PLOT=PEEK(START+23)+256*PEEK(
64 88 START+24)
66 90 LET SET=PEEK(START+25)+256*PEEK(START
68 92 +26)
70 94 LET SETCOLOR=PEEK(START+27)+256*PE
72 96 EK(START+28)
74 100 8080FF:SET=280
76 102 REM BEGIN MAIN PROGRAM
78 104 80500 910
80 106 POKE C10F,1
82 108 A=USR(GRAPHICS,13):POKE 752,255
84 110 230 ? "THE SAME ROUTINE IN G.U.P. WITH
86 112 G.U.P."
88 114 ? "USING MULTIPLE PARAMETERS FOR A
90 116 PERFORM: A=USR(SET,85,85,85,85)
92 118 250 FOR T=0 TO 79 STEP 3: T2=T/2: U=159-
94 120 T2: U2=159-T2
96 122 A=USR(LINE,T,T2,U,U2,T,U2,T,T
98 124 2)
100 126 BENT T:POKE 752,255
102 128 ? "TWICE THE PIXELS IN HALF THE T
104 130 IME..."
106 132 ? "HOW ABOUT SOME MULTI-COLOR DISP
108 134 LAY?"
110 136 A=USR(SET,164,20,134,165):GOSUB 11
112 138 64:FOR T=0 TO 8 STEP 1
114 140 A=USR(LINE,T,T,159-T)
116 142 A=USR(LINE,159-T,159-T,159-T)
118 144 KP 570 BENT T
120 146 80500 1100
122 148 A=USR(GRAPHICS,13):POKE 752,255
124 150 V 360 ? "AND NOW, THE SUPER FAST CIRCLE
126 152 ..."
128 154 70 ? "80 CIRCLES DRAWN IN 4.8 SECONDS
130 156 (6 CIRCLES PER SECOND)"
132 158 300 FOR V=1 TO 30
134 160 A=USR(RADORN)
136 162 A=USR(CIRCLE,60+V,60+V,60)
138 164 410 BENT V
140 166 420 GOSUB 1100
142 168 A=USR(GRAPHICS,15)
144 170 440 POKE 752,255:?"Nuff fast circles.
146 172 ..."
148 174 450 FOR 0=0 TO 8 STEP 4
150 176 460 H=PEEK(20):A=USR(SET,H,H,H,H):A=US
152 178 E(CIRCLE,79,79,8)
154 180 470 A=USR(SET,8,8,8,8):A=USR(CIRCLE,79
156 182 ,79,0,2)
158 184 480 BENT 0
160 186 490 GOSUB 1100
162 188 A=USR(GRAPHICS,15):POKE 752,255
164 190 V 510 ? "4 AND NOW, SOME MORE LINE DRAWI
166 192 NG..."
168 194 520 FOR T=0 TO 70
170 196 530 GOSUB 1100
172 198 540 A=USR(LINE,T,T,T+79,T,T+79,T+79,T
174 199 ,T)
176 200 T+79,T)
178 202 T+79,T)
179 203 T+79,T)
180 204 T+79,T)
181 205 T+79,T)
182 206 T+79,T)
183 207 T+79,T)
184 208 T+79,T)
185 209 T+79,T)
186 210 T+79,T)
187 211 T+79,T)
188 212 T+79,T)
189 213 T+79,T)
190 214 T+79,T)
191 215 T+79,T)
192 216 T+79,T)
193 217 T+79,T)
194 218 T+79,T)
195 219 T+79,T)
196 220 T+79,T)
197 221 T+79,T)
198 222 T+79,T)
199 223 T+79,T)
200 224 T+79,T)
201 225 T+79,T)
202 226 T+79,T)
203 227 T+79,T)
204 228 T+79,T)
205 229 T+79,T)
206 230 T+79,T)
207 231 T+79,T)
208 232 T+79,T)
209 233 T+79,T)
210 234 T+79,T)
211 235 T+79,T)
212 236 T+79,T)
213 237 T+79,T)
214 238 T+79,T)
215 239 T+79,T)
216 240 T+79,T)
217 241 T+79,T)
218 242 T+79,T)
219 243 T+79,T)
220 244 T+79,T)
221 245 T+79,T)
222 246 T+79,T)
223 247 T+79,T)
224 248 T+79,T)
225 249 T+79,T)
226 250 T+79,T)
227 251 T+79,T)
228 252 T+79,T)
229 253 T+79,T)
230 254 T+79,T)
231 255 T+79,T)
232 256 T+79,T)
233 257 T+79,T)
234 258 T+79,T)
235 259 T+79,T)
236 260 T+79,T)
237 261 T+79,T)
238 262 T+79,T)
239 263 T+79,T)
240 264 T+79,T)
241 265 T+79,T)
242 266 T+79,T)
243 267 T+79,T)
244 268 T+79,T)
245 269 T+79,T)
246 270 T+79,T)
247 271 T+79,T)
248 272 T+79,T)
249 273 T+79,T)
250 274 T+79,T)
251 275 T+79,T)
252 276 T+79,T)
253 277 T+79,T)
254 278 T+79,T)
255 279 T+79,T)
256 280 T+79,T)
257 281 T+79,T)
258 282 T+79,T)
259 283 T+79,T)
260 284 T+79,T)
261 285 T+79,T)
262 286 T+79,T)
263 287 T+79,T)
264 288 T+79,T)
265 289 T+79,T)
266 290 T+79,T)
267 291 T+79,T)
268 292 T+79,T)
269 293 T+79,T)
270 294 T+79,T)
271 295 T+79,T)
272 296 T+79,T)
273 297 T+79,T)
274 298 T+79,T)
275 299 T+79,T)
276 300 T+79,T)
277 301 T+79,T)
278 302 T+79,T)
279 303 T+79,T)
280 304 T+79,T)
281 305 T+79,T)
282 306 T+79,T)
283 307 T+79,T)
284 308 T+79,T)
285 309 T+79,T)
286 310 T+79,T)
287 311 T+79,T)
288 312 T+79,T)
289 313 T+79,T)
290 314 T+79,T)
291 315 T+79,T)
292 316 T+79,T)
293 317 T+79,T)
294 318 T+79,T)
295 319 T+79,T)
296 320 T+79,T)
297 321 T+79,T)
298 322 T+79,T)
299 323 T+79,T)
300 324 T+79,T)
301 325 T+79,T)
302 326 T+79,T)
303 327 T+79,T)
304 328 T+79,T)
305 329 T+79,T)
306 330 T+79,T)
307 331 T+79,T)
308 332 T+79,T)
309 333 T+79,T)
310 334 T+79,T)
311 335 T+79,T)
312 336 T+79,T)
313 337 T+79,T)
314 338 T+79,T)
315 339 T+79,T)
316 340 T+79,T)
317 341 T+79,T)
318 342 T+79,T)
319 343 T+79,T)
320 344 T+79,T)
321 345 T+79,T)
322 346 T+79,T)
323 347 T+79,T)
324 348 T+79,T)
325 349 T+79,T)
326 350 T+79,T)
327 351 T+79,T)
328 352 T+79,T)
329 353 T+79,T)
330 354 T+79,T)
331 355 T+79,T)
332 356 T+79,T)
333 357 T+79,T)
334 358 T+79,T)
335 359 T+79,T)
336 360 T+79,T)
337 361 T+79,T)
338 362 T+79,T)
339 363 T+79,T)
340 364 T+79,T)
341 365 T+79,T)
342 366 T+79,T)
343 367 T+79,T)
344 368 T+79,T)
345 369 T+79,T)
346 370 T+79,T)
347 371 T+79,T)
348 372 T+79,T)
349 373 T+79,T)
350 374 T+79,T)
351 375 T+79,T)
352 376 T+79,T)
353 377 T+79,T)
354 378 T+79,T)
355 379 T+79,T)
356 380 T+79,T)
357 381 T+79,T)
358 382 T+79,T)
359 383 T+79,T)
360 384 T+79,T)
361 385 T+79,T)
362 386 T+79,T)
363 387 T+79,T)
364 388 T+79,T)
365 389 T+79,T)
366 390 T+79,T)
367 391 T+79,T)
368 392 T+79,T)
369 393 T+79,T)
370 394 T+79,T)
371 395 T+79,T)
372 396 T+79,T)
373 397 T+79,T)
374 398 T+79,T)
375 399 T+79,T)
376 400 T+79,T)
377 401 T+79,T)
378 402 T+79,T)
379 403 T+79,T)
380 404 T+79,T)
381 405 T+79,T)
382 406 T+79,T)
383 407 T+79,T)
384 408 T+79,T)
385 409 T+79,T)
386 410 T+79,T)
387 411 T+79,T)
388 412 T+79,T)
389 413 T+79,T)
390 414 T+79,T)
391 415 T+79,T)
392 416 T+79,T)
393 417 T+79,T)
394 418 T+79,T)
395 419 T+79,T)
396 420 T+79,T)
397 421 T+79,T)
398 422 T+79,T)
399 423 T+79,T)
400 424 T+79,T)
401 425 T+79,T)
402 426 T+79,T)
403 427 T+79,T)
404 428 T+79,T)
405 429 T+79,T)
406 430 T+79,T)
407 431 T+79,T)
408 432 T+79,T)
409 433 T+79,T)
410 434 T+79,T)
411 435 T+79,T)
412 436 T+79,T)
413 437 T+79,T)
414 438 T+79,T)
415 439 T+79,T)
416 440 T+79,T)
417 441 T+79,T)
418 442 T+79,T)
419 443 T+79,T)
420 444 T+79,T)
421 445 T+79,T)
422 446 T+79,T)
423 447 T+79,T)
424 448 T+79,T)
425 449 T+79,T)
426 450 T+79,T)
427 451 T+79,T)
428 452 T+79,T)
429 453 T+79,T)
430 454 T+79,T)
431 455 T+79,T)
432 456 T+79,T)
433 457 T+79,T)
434 458 T+79,T)
435 459 T+79,T)
436 460 T+79,T)
437 461 T+79,T)
438 462 T+79,T)
439 463 T+79,T)
440 464 T+79,T)
441 465 T+79,T)
442 466 T+79,T)
443 467 T+79,T)
444 468 T+79,T)
445 469 T+79,T)
446 470 T+79,T)
447 471 T+79,T)
448 472 T+79,T)
449 473 T+79,T)
450 474 T+79,T)
451 475 T+79,T)
452 476 T+79,T)
453 477 T+79,T)
454 478 T+79,T)
455 479 T+79,T)
456 480 T+79,T)
457 481 T+79,T)
458 482 T+79,T)
459 483 T+79,T)
460 484 T+79,T)
461 485 T+79,T)
462 486 T+79,T)
463 487 T+79,T)
464 488 T+79,T)
465 489 T+79,T)
466 490 T+79,T)
467 491 T+79,T)
468 492 T+79,T)
469 493 T+79,T)
470 494 T+79,T)
471 495 T+79,T)
472 496 T+79,T)
473 497 T+79,T)
474 498 T+79,T)
475 499 T+79,T)
476 500 T+79,T)
477 501 T+79,T)
478 502 T+79,T)
479 503 T+79,T)
480 504 T+79,T)
481 505 T+79,T)
482 506 T+79,T)
483 507 T+79,T)
484 508 T+79,T)
485 509 T+79,T)
486 510 T+79,T)
487 511 T+79,T)
488 512 T+79,T)
489 513 T+79,T)
490 514 T+79,T)
491 515 T+79,T)
492 516 T+79,T)
493 517 T+79,T)
494 518 T+79,T)
495 519 T+79,T)
496 520 T+79,T)
497 521 T+79,T)
498 522 T+79,T)
499 523 T+79,T)
500 524 T+79,T)
501 525 T+79,T)
502 526 T+79,T)
503 527 T+79,T)
504 528 T+79,T)
505 529 T+79,T)
506 530 T+79,T)
507 531 T+79,T)
508 532 T+79,T)
509 533 T+79,T)
510 534 T+79,T)
511 535 T+79,T)
512 536 T+79,T)
513 537 T+79,T)
514 538 T+79,T)
515 539 T+79,T)
516 540 T+79,T)
517 541 T+79,T)
518 542 T+79,T)
519 543 T+79,T)
520 544 T+79,T)
521 545 T+79,T)
522 546 T+79,T)
523 547 T+79,T)
524 548 T+79,T)
525 549 T+79,T)
526 550 T+79,T)
527 551 T+79,T)
528 552 T+79,T)
529 553 T+79,T)
530 554 T+79,T)
531 555 T+79,T)
532 556 T+79,T)
533 557 T+79,T)
534 558 T+79,T)
535 559 T+79,T)
536 560 T+79,T)
537 561 T+79,T)
538 562 T+79,T)
539 563 T+79,T)
540 564 T+79,T)
541 565 T+79,T)
542 566 T+79,T)
543 567 T+79,T)
544 568 T+79,T)
545 569 T+79,T)
546 570 T+79,T)
547 571 T+79,T)
548 572 T+79,T)
549 573 T+79,T)
550 574 T+79,T)
551 575 T+79,T)
552 576 T+79,T)
553 577 T+79,T)
554 578 T+79,T)
555 579 T+79,T)
556 580 T+79,T)
557 581 T+79,T)
558 582 T+79,T)
559 583 T+79,T)
560 584 T+79,T)
561 585 T+79,T)
562 586 T+79,T)
563 587 T+79,T)
564 588 T+79,T)
565 589 T+79,T)
566 590 T+79,T)
567 591 T+79,T)
568 592 T+79,T)
569 593 T+79,T)
570 594 T+79,T)
571 595 T+79,T)
572 596 T+79,T)
573 597 T+79,T)
574 598 T+79,T)
575 599 T+79,T)
576 600 T+79,T)
577 601 T+79,T)
578 602 T+79,T)
579 603 T+79,T)
580 604 T+79,T)
581 605 T+79,T)
582 606 T+79,T)
583 607 T+79,T)
584 608 T+79,T)
585 609 T+79,T)
586 610 T+79,T)
587 611 T+79,T)
588 612 T+79,T)
589 613 T+79,T)
590 614 T+79,T)
591 615 T+79,T)
592 616 T+79,T)
593 617 T+79,T)
594 618 T+79,T)
595 619 T+79,T)
596 620 T+79,T)
597 621 T+79,T)
598 622 T+79,T)
599 623 T+79,T)
600 624 T+79,T)
601 625 T+79,T)
602 626 T+79,T)
603 627 T+79,T)
604 628 T+79,T)
605 629 T+79,T)
606 630 T+79,T)
607 631 T+79,T)
608 632 T+79,T)
609 633 T+79,T)
610 634 T+79,T)
611 635 T+79,T)
612 636 T+79,T)
613 637 T+79,T)
614 638 T+79,T)
615 639 T+79,T)
616 640 T+79,T)
617 641 T+79,T)
618 642 T+79,T)
619 643 T+79,T)
620 644 T+79,T)
621 645 T+79,T)
622 646 T+79,T)
623 647 T+79,T)
624 648 T+79,T)
625 649 T+79,T)
626 650 T+79,T)
627 651 T+79,T)
628 652 T+79,T)
629 653 T+79,T)
630 654 T+79,T)
631 655 T+79,T)
632 656 T+79,T)
633 657 T+79,T)
634 658 T+79,T)
635 659 T+79,T)
636 660 T+79,T)
637 661 T+79,T)
638 662 T+79,T)
639 663 T+79,T)
640 664 T+79,T)
641 665 T+79,T)
642 666 T+79,T)
643 667 T+79,T)
644 668 T+79,T)
645 669 T+79,T)
646 670 T+79,T)
647 671 T+79,T)
648 672 T+79,T)
649 673 T+79,T)
650 674 T+79,T)
651 675 T+79,T)
652 676 T+79,T)
653 677 T+79,T)
654 678 T+79,T)
655 679 T+79,T)
656 680 T+79,T)
657 681 T+79,T)
658 682 T+79,T)
659 683 T+79,T)
660 684 T+79,T)
661 685 T+79,T)
662 686 T+79,T)
663 687 T+79,T)
664 688 T+79,T)
665 689 T+79,T)
666 690 T+79,T)
667 691 T+79,T)
668 692 T+79,T)
669 693 T+79,T)
670 694 T+79,T)
671 695 T+79,T)
672 696 T+79,T)
673 697 T+79,T)
674 698 T+79,T)
675 699 T+79,T)
676 700 T+79,T)
677 701 T+79,T)
678 702 T+79,T)
679 703 T+79,T)
680 704 T+79,T)
681 705 T+79,T)
682 706 T+79,T)
683 707 T+79,T)
684 708 T+79,T)
685 709 T+79,T)
686 710 T+79,T)
687 711 T+79,T)
688 712 T+79,T)
689 713 T+79,T)
690 714 T+79,T)
691 715 T+79,T)
692 716 T+79,T)
693 717 T+79,T)
694 718 T+79,T)
695 719 T+79,T)
696 720 T+79,T)
697 721 T+79,T)
698 722 T+79,T)
699 723 T+79,T)
700 724 T+79,T)
701 725 T+79,T)
702 726 T+79,T)
703 727 T+79,T)
704 728 T+79,T)
705 729 T+79,T)
706 730 T+79,T)
707 731 T+79,T)
708 732 T+79,T)
709 733 T+79,T)
710 734 T+79,T)
711 735 T+79,T)
712 736 T+79,T)
713 737 T+79,T)
714 738 T+79,T)
715 739 T+79,T)
716 740 T+79,T)
717 741 T+79,T)
718 742 T+79,T)
719 743 T+79,T)
720 744 T+79,T)
721 745 T+79,T)
722 746 T+79,T)
723 747 T+79,T)
724 748 T+79,T)
725 749 T+79,T)
726 750 T+79,T)
727 751 T+79,T)
728 752 T+79,T)
729 753 T+79,T)
730 754 T+79,T)
731 755 T+79,T)
732 756 T+79,T)
733 757 T+79,T)
734 758 T+79,T)
735 759 T+79,T)
736 760 T+79,T)
737 761 T+79,T)
738 762 T+79,T)
739 763 T+79,T)
740 764 T+79,T)
741 765 T+79,T)
742 766 T+79,T)
743 767 T+79,T)
744 768 T+79,T)
745 769 T+79,T)
746 770 T+79,T)
747 771 T+79,T)
748 772 T+79,T)
749 773 T+79,T)
750 774 T+79,T)
751 775 T+79,T)
752 776 T+79,T)
753 777 T+79,T)
754 778 T+79,T)
755 779 T+79,T)
756 780 T+79,T)
757 781 T+79,T)
758 782 T+79,T)
759 783 T+79,T)
760 784 T+79,T)
761 785 T+79,T)
762 786 T+79,T)
763 787 T+79,T)
764 788 T+79,T)
765 789 T+79,T)
766 790 T+79,T)
767 791 T+79,T)
768 792 T+79,T)
769 793 T+79,T)
770 794 T+79,T)
771 795 T+79,T)
772 796 T+79,T)
773 797 T+79,T)
774 798 T+79,T)
775 799 T+79,T)
776 800 T+79,T)
777 801 T+79,T)
778 802 T+79,T)
779 803 T+79,T)
780 804 T+79,T)
781 805 T+79,T)
782 806 T+79,T)
783 807 T+79,T)
784 808 T+79,T)
785 809 T+79,T)
786 810 T+79,T)
787 811 T+79,T)
788 812 T+79,T)
789 813 T+79,T)
790 814 T+79,T)
791 815 T+79,T)
792 816 T+79,T)
793 817 T+79,T)
794 818 T+79,T)
795 819 T+79,T)
796 820 T+79,T)
797 821 T+79,T)
798 822 T+79,T)
799 823 T+79,T)
800 824 T+79,T)
801 825 T+79,T)
802 826 T+79,T)
803 827 T+79,T)
804 828 T+79,T)
805 829 T+79,T)
806 830 T+79,T)
807 831 T+79,T)
808 832 T+79,T)
809 833 T+79,T)
810 834 T+79,T)
811 835 T+79,T)
812 836 T+79,T)
813 837 T+79,T)
814 838 T+79,T)
815 839 T+79,T)
816 840 T+79,T)
817 841 T+79,T)
818 842 T+79,T)
819 843 T+79,T)
820 844 T+79,T)
821 845 T+79,T)
822 846 T+79,T)
823 847 T+79,T)
824 848 T+79,T)
825 849 T+79,T)
826 850 T+79,T)
827 851 T+79,T)
828 852 T+79,T)
829 853 T+79,T)
830 854 T+79,T)
831 855 T+79,T)
832 856 T+79,T)
833 857 T+79,T)
834 858 T+79,T)
835 859 T+79,T)
836 860 T+79,T)
837 861 T+79,T)
838 862 T+79,T)
839 863 T+79,T)
840 864 T+79,T)
841 865 T+79,T)
842 866 T+79,T)
843 867 T+79,T)
844 868 T+79,T)
845 869 T+79,T)
846 870 T+79,T)
847 871 T+79,T)
848 872 T+79,T)
849 873 T+79,T)
850 874 T+79,T)
851 875 T+79,T)
852 876 T+79,T)
853 877 T+79,T)
854 878 T+79,T)
855 879 T+79,T)
856 880 T+79,T)
857 881 T+79,T)
858 882 T+79,T)
859 883 T+79,T)
860 884 T+79,T)
861 885 T+79,T)
862 886 T+79,T)
863 887 T+79,T)
864 888 T+79,T)
865 889 T+79,T)
866 890 T+79,T)
867 891 T+79,T)
868 892 T+79,T)
869 893 T+79,T)
870 894 T+79,T)
871 895 T+79,T)
872 896 T+79,T)
873 897 T+79,T)
874 898 T+79,T)
875 899 T+79,T)
876 900 T+79,T)
877 901 T+79,T)
878 902 T+79,T)
879 903 T+79,T)
880 904 T+79,T)
881 905 T+79,T)
882 906 T+79,T)
883 907 T+79,T)
884 908 T+79,T)
885 909 T+79,T)
886 910 T+79,T)
887 911 T+79,T)
888 912 T+79,T)
889 913 T+79,T)
890 914 T+79,T)
891 915 T+79,T)
892 916 T+79,T)
893 917 T+79,T)
894 918 T+79,T)
895 919 T+79,T)
896 920 T+79,T)
897 921 T+79,T)
898 922 T+79,T)
899 923 T+79,T)
900 924 T+79,T)
901 925 T+79,T)
902 926 T+79,T)
903 927 T+79,T)
904 928 T+79,T)
905 929 T+79,T)
906 930 T+79,T)
907 931 T+79,T)
908 932 T+79,T)
909 933 T+79,T)
910 934 T+79,T)
911 935 T+79,T)
912 936 T+79,T)
913 937 T+79,T)
914 938 T+79,T)
915 939 T+79,T)
916 940 T+79,T)
917 941 T+79,T)
918 942 T+79,T)
919 943 T+79,T)
920 944 T+79,T)
921 945 T+79,T)
922 946 T+79,T)
923 947 T+79,T)
924 948 T+79,T)
925 949 T+79,T)
926 950 T+79,T)
927 951 T+79,T)
928 952 T+79,T)
929 953 T+79,T)
930 95
```

# product reviews

## COLORTONE KEYBOARD

(Waveform Corp.)  
Protecto Enterprises  
Box 550  
Barrington, IL 60010  
(312) 382-5244

Reviewed by Nat Friedland

At \$49, the Colortone Keyboard by Waveform Corp. is not a tool for professional musicians. But nevertheless it is an intriguing Atari music device that puts a surprising amount of musical power and feedback literally at your fingertips.

The Colortone is a recent conversion from a fairly successful Commodore 64 product. As a matter of fact, Antic received its copy just one day after programmer Russ Karnas delivered the conversion software to Waveform. Actually our keyboard's converter hookup is a prototype that dangles exposed on a spliced cable.

Distribution for this product is just getting set up, but one source you should be able to obtain it from is the Protecto mail-order house whose address is shown above. (We recommend that you verify availability by phone before mailing Protecto a check.)

The Colortone is a membrane keyboard, after the fashion of the old Atari 400. It's laid over a sturdy plastic base, but looks a lot like those cardboard piano keyboards that kids in group piano classes used for practicing their fingering.

Once you select your choices from the function keys at the top of the board, you will probably wind up playing mostly on the Color Harp strip above the regular piano-key diagram. The Color Harp gives you only the notes in the scale you have chosen, so you can fool around without the risk of hitting a drastically wrong note.

The Colortone software does a lot of interesting things. You get a choice of seven well done pop/rock two-voice accompaniments or a simple metronome beat. Some of the most common and effective rock patterns are utilized, boogie, ballad, etc.

You have eight instrumental voices to choose from and a variety of musical scales. You can also adjust the speed, pause, and listen to playback of your solo with or without saving it to disk.

As you are playing, the software writes out the musical notation of your solo, showing it above the bass accompaniment notes. At the same time, it also tracks your fingering with red lights over a piano key display.

It is easy to sound pretty good as you play along with the accompaniment by tapping or even rubbing your fingers over the color harp. You can never be drastically out of tune, although you are able to experiment with interestingly dissonant effects if you wish.

A lot of your noodling will sound like the background music from your favorite videogames.

Where Colortone Keyboard eventually shows its limitations is its lack of precision at reflecting musical ideas you are consciously trying to play. It's often nearly impossible to find a specific note you're looking for in the color harp section. And the membrane sensors on the piano diagram don't respond fast enough to pick up speedy passages.

Eventually it seems that no matter what you try to do, you find yourself repeating a consistent pattern of chromatic eighth-note scales as the accompaniment pump steadily along.



## SENECOM

introduces

DR. P.D. QUICK, D.D.  
Dr. Quick Explains Buying  
On Margin, And Discloses

### THE HIDDEN HEALTH BENEFITS Of Using PDQ Diskettes

Q. Doctor Quick, your PDQ Disks are double-density. Will they work in my single-density disk drive?

A. Ja. Oh, ja, they work so good, I'm telling you, yes! They work like a charm.

Q. Aren't your PDQ Disks better than I really need?

A. I should hop so! We make sure it is better, not just this much, but this much, and then some. Double density, ja, and 48 tracks per inch, certified. And people is using them right now at 95 TP, is that better yet? You betcha my little!

Q. So why should I pay for quality I don't need?

A. I can't believe what my ears are telling me! You don't know of the buying on margin? You got always to buy on margin. Everything!

Q. Buy on margin?

A. I am drawing you a hypothetical case. You are going to put a steering column in your car, okay? For ten dollars you can get one that will last you two, maybe three years. Then one day it turns to peanut butter while you're driving, and booby! For twelve bucks, let's say if you can buy a steering column to last five years. For thirteen fifty you could get one to last 24 billion years, give or take a zillion. Which one do you go for?

Q. You're talking about a margin of safety, see?

A. You got it. A margin. You like to live dangerous, maybe? Go for the cheapie, save a buck or two. You got better smarts than that? You buy on margin when you get a steering column. Or a disk.

Q. Is see your point.

A. No, that is before the point. Now I tell you the point. You ready?

You buy on margin and get better than you need; you smile more, right? Fewer wrinkles in the forehead. Your food goes down nicer. All those tension backaches, they go away. Your doctor looks you over and says, "It's a miracle! I can't believe such perfection in a human person!"

So, you going to chisel? Or do you show is n'it go empty up here, and buy on margin?

PDQ — Premium Disk Quality — Diskettes are Double-Sided (yes, they'll work in your 480 Drive) as well as Double-Density, and carry a 2-year replacement warranty — and even a 30-day money-back guarantee.

AND AN EXTRA VALUE! To introduce our new line of "Namebrand" disks, we'll even engrave your name in bright golden letters on each disk at no cost!

PREMIUM QUALITY AT A REASONABLE PRICE. Namebrand Disks are \$39.90 a box (10 disks) for 5 bonus or more. \$34.90/box.

PLUS AN INTRODUCTORY OFFER. For orders mailed before June 30, 1985, deduct \$10.00 per box. We're that sure you'll reorder Namebrand PDQ's once you've seen them and tried them!

AND AN OPPORTUNITY. With each order is included a free Opportunity Disk. Boost its program into a disk or folk. And give some thought to a business of your own.

Please add \$2.00 to your order for postage & handling (USA and Canada; others add \$4.00). NY residents add 7% sales tax. Rush your order to:

SENECOM

Dept. 17

13 White St.

Seneca Falls, NY 13156

Atari® is a registered trademark of Atari Corporation. Senecon® is a registered trademark of Seneca Computer Company, Inc.

**JOIN CompuClub™**  
and receive  
the  
attention  
you deserve.

**ATARI®**  
Languages  
Games  
Business  
Educational  
Graphics  
Utilities

- ⌘ Receive our disk based catalog and pricebook.
- ⌘ Buy from people who specialize in ATARI exclusively.
- ⌘ Receive our 8 pg. newspapers 9 times a year filled with critiques, special tips, and classified ads.
- ⌘ Get at least 25% off all titles (and often more!).
- ⌘ Receive consistent low prices and prompt, knowledgeable service.
- ⌘ Choose from over 1,500 software items.

**JOIN CompuClub™**  
Where Atari owners belong.

To join by phone  
call toll free **800-631-3111**  
In Mass call 617-879-5252  
Please have credit card number ready!  
Or return this coupon with \$5.00\*

**YES, I want to be a preferred customer of CompuClub™. Rush me my catalog and price book. Enclosed please find my \$5.00 registration fee.**

Please make check payable to CompuClub™  
Payment enclosed ☐ check ☐ money order

Bill my ☐ Mastercard ☐ Visa Expires \_\_\_\_\_  
IO# \_\_\_\_\_

Signature \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Atari Model \_\_\_\_\_

Hours: Mon - Fri 11:30 AM - 7:00 PM Eastern time

Answering services after hours

CompuClub™, P.O. Box 652, Natick MA 01750

\*Overseas membership \$25.00 per year

⌘ Atari - Trademark of Atari Corporation

## ELECTRONIC-ONE®

THE  
LOWEST  
PRICES  
THE  
BEST  
SERVICE



### ATARI COMPUTER HARDWARE

ATARI 800XL 86.00  
ATARI 1200XL 58.00  
1018 CLASS. REG. 38.99

### DISK DRIVES

ATARI 1050 146.00  
INDUS G.T. 224.00

### PRINTERS

GERMINI 110X 239.99  
DE MINI 5210 239.99  
STAR POWER TYPE 319.99  
EPSON RX80 229.99  
EPSON RX80 FT 229.99  
EPSON FX80 369.99  
PROWRITER 8010 319.99  
INTERFACE CABLES  
APE FACE 54.99  
I. PRINT 54.99  
MPP 1150 54.99

### ATARI COMPUTER HARDWARE

1025 COLOR PLOTTER 49.99  
1027 LETTER 236.00  
1028 PRINTER 149.00  
1030 MODEM 169.00  
(ADV. SOFTWARE)  
ATARI SCIENCE LAB 39.99  
MPP 1050 MODEM 109.00  
COMMODORE 1702 208.00  
TECHNIA COLOR 14 199.00  
AMDEC 300 COLOR 228.00

### SPECIAL PKG. OF 10

**888**

MAUSHA  
GENERIC  
DISK  
SINGLE SIDE  
DOUBLE DENSITY

HOW TO ORDER: CASHIER CHECK MONEY ORDER MASTERCARD\* or  
VISA\* (Add 4% for charge cards)

G.O.D.'s SHIPPED U.P.S.

SHIPPING: Prompt one day shipping on in-stock merchandise. Ohio residents

add 5.9% sales tax. Add \$3.00 on all orders under \$100.00. Add \$5.00 on all

orders over \$100.00.

INTERNATIONAL: Add 15% to all orders.

CALL OR WRITE FOR FREE CATALOG

**ELECTRONIC ONE®**

P.O. Box 13426 • Columbus, Ohio 43213

### ELECTRONIC CALL

ONE (614)864-9994

P.O. Box 13426 • Columbus, Ohio 43213

### THE LOWEST PRICES

ATARI ATARI GOLFCONSON

2600 3000 INTELLIVISION

GAMES GAMES ATARI SOFT

ATARI COMPUTER SOFTWARE

ATARI WRITER 29.99

TOUCH TYPING 3.99

LOGO 59.00

CONV. FRENCH 19.99

SYN FILE 35.99

SYN CALC 35.99

SYN TREND 25.00

EASTERN FRONT 9.99

PAC MAN 7.99

STAR RAIDERS 7.99

ASSEMBLY EDITOR 24.99

MILLIPED 14.99

MOON PATROL 14.99

FLIGHT SIMULATOR II 34.99

CALL OR WRITE FOR THE

PRICE OF YOUR PROGRAM\*

NO PERSONAL CHECKS NO

C.O.D.'s

SHIPPED U.P.S.

INTERNATIONAL: Add 15% to all orders.

CALL OR WRITE FOR FREE CATALOG

**ELECTRONIC ONE®**

P.O. Box 13426 • Columbus, Ohio 43213

## Software Discounters of America (& Peripherals, too!)

S.D. of A.

For Orders Only 1-800-225-7638\*

Inquiries and PA 412-361-5291

Open Saturday

- \* Free shipping on orders over \$100 in continental USA
- \* No surcharge for VISA/MASTERCARD

## KOALAPAD™ TOUCH TABLET.



- Video drawing tool.
- Comes with Koala Painter® —full feature computer graphics program.
- Use the KoalaPad for cursor control, graphics, or custom keyboard.
- Educational, entertainment, business software available.
- Atari® on Disk.

**Koala**  
Technologies Corporation

Lowest  
Price  
Ever

**29<sup>95</sup>**

\*Ordering and Terms: Orders with cash or money order shipped immediately. Personal company checks, allow 3 weeks clearance. No G.O.D.'s. Shipping: Continental U.S.A.—Orders under \$100 add \$5; free shipping on orders over \$100. PA residents add 6% sales tax. AK, HI, FPO-APO—add \$5 on all orders. International Order Policy—No Credit Cards—add \$15 or 15% of order whichever is greatest. Defective merchandise will be replaced with same merchandise—NO CREDIT! Return must have authorization number (412) 361-5291. Prices subject to change without notice.

# ADVERTISERS

ADD-ON SYSTEMS .....	11
ALLEN MACROWARE .....	44
AMERICAN TV .....	B1
ANTIC .....	see insert
ASTRA SYSTEMS .....	1B
B & C COMPUTERS .....	79
COMPUCAT .....	7B
COMPUCLUB .....	75
COMPUTER CREATIONS .....	34
COMPUTER GAMES PLUS .....	B1
COMPUTER PALACE .....	42
COMPUTER SOFTWARE SERVICE .....	49
CONTINENTAL .....	4
DANDY DATA .....	79
DORSETT EDUCATIONAL .....	9
EASTERN HOUSE .....	33
ELECTRONIC ONE .....	7B
HAPPY COMPUTING .....	20
INDUS .....	83
KYAN SOFTWARE .....	B1
LOTSA BYTES .....	3
MICROBITS .....	8C
NEW HORIZONS SOFTWARE .....	75
PROGRAMMERS WORKSHOP .....	15
PROTECTO ENTERPRISES .....	26,27
ROYAL SOFTWARE .....	13
SENECOM .....	77
SERIOUS SOFTWARE .....	19
SOFTWARE DISCOUNTERS OF AMERICA .....	36,7B
SOUTHERN SOFTWARE .....	67
SUBLOGIC .....	2
TELESYS .....	44

## SHOPPER'S GUIDE



The Online Catalog of Computers and Software  
Our Prices are WHOLESALE + 10%

### SAMPLES!!!

- Star Micronics SG-10 Printer — \$261
- Atan 850 Interface — \$117
- Indus GT Disk Drive — \$234
- Olympus RD Daisy Wheel Printer — \$332
- Atan 1050 Disk Drive — \$172
- Batteries Included Home Pak — \$36

ASK ABOUT OUR FREE PRICE LIST  
FREE SOFTWARE + FREE BULLETIN BOARD SERVICE

**(408) 353-1836**

We support the complete Atan product line

Instant Shipping (or as fast as we can) Mastercard & Visa accepted (no cash charges) Shipping & handling add 5%  
California customers add 6.5% sales tax. Order by phone Mon-Fri - 10 a.m.-5 p.m. PST. Order by mail only 8 p.m.-8 a.m. from our online Teletyping.  
Prices subject to change without notice

### COMPUCAT

24500 Glenwood Hwy., Los Gatos, CA 95030

## SPARE PARTS FOR YOUR ATARI

Hard to find integrated circuits \$3 each  
On CPU GTIA, ANTIC, CTIA, CPU 6502, CPU 6511  
On 12K OS, Math ROM 3988, OS ROMs 4980 & 5980  
On 800/400 Main, Policy 8520 PIA  
On 810 & 820 MPU 8557, PIA 8532, RAM 6810 ROM C  
Field Service Manuals 800/400, 800/80, or 810 \$25 ea  
For 1990 or 1290/80, \$20 ea. For 410 or 835 \$15 ea  
Diagnostic Cartridges Computer or Disk \$20 ea



**(408) 554-0666**  
3400 El Camino Real, #1,  
Santa Clara, CA 95051  
Hours: Tuesday-Friday 10am-7pm,  
Sat 10am-5pm

Terms: UPS Shipments within USA Add \$5 CDD  
or air-pd Calif. Pkg. +90 50% sales tax

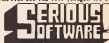
## When You're Tired of Just Playing Games!

Have you given up trying to find a source for business and educational software? Do you get the feeling that some folks are more aware of the latest game than the best word processor or pre-school program?

If so... Welcome to Serious Software, where our name says it all.

Our goal is to provide you with a comprehensive selection of the best business and educational materials available for the Atan, backed with helpful, knowledgeable advice.

Write or call for our Free Catalog, M.C. and VISA kindly accepted.  
Toll Free 800-782-7007 (Oregon 479-8516)



310 N.W. 4th St. Grants Pass, OR 97526

## HANDICARDS™

Quick Reference Instructions for Atari Programs

Now available for:  
**ATARIWRITER™**  
Beginning BASIC

- Organized commands
- Easy to read
- Durable plastic (11" x 4 1/4")
- Use on or off computer

Only \$8.95 ea. postpaid  
(Both for only \$15.95 p.p.d.)

NY residents add sales tax

Dealer inquiries invited. \*Trademark of Atari Corp.

Handi Publishing Inc.  
P.O. Box 453  
Ardsley, NY 10502

## BETTER'N BIG BEN

Provide your home computer the current time & date with the new Click Clock from Dandy Data.

### Features:

- Easy installation plugs into Atari—standard joystick port
- Long-life battery power Click Clock arrives running
- Sample software included
- 1001 programming uses

Time to order.

For your Click Clock send \$45 in payment to:

### DANDY DATA

2300 SW STAFFORD ROAD  
TUALATIN, OR 97062  
\*Hand Assembled in Oregon

# atari service center

Service Centers: Retailers to  
get your Atari in Atari call  
1-800-541-3400

## ALABAMA

VIDEO REPAIR CO  
2080 CENTREPOINT RD  
BIRMINGHAM  
205-854-9212

RAINBOW CITY SERVICE  
CENTER  
244 RAINBOW PLAZA  
SAGEEN  
205-442-8818

C & R ELECTRONICS  
704 HOLDSBOME AVE  
MOBILE  
205-473-3030

BUSINESS SERVICES  
2828 CHESTNUT ST  
MONTGOMERY  
205-834-2299

## ARIZONA

RICK'S TV & APPLANCE  
1184 E. DESIRE OF CLUBS  
SHOW LOW  
602-337-7625

## CALIFORNIA

LEARNING TREE COMPUTER  
CTR  
2441 N. TUSTIN SUITE 800  
SANTA ANA  
714-967-1575

COMPUTER SUPPORT  
SERVICE  
52 S. LINCOLN AVE #1  
SOUTH SAN FRANCISCO  
415-889-6808

D & G COMPUTERS  
4156 MANZANITA AVE #200  
CARMICHAEL  
916-485-7779

SAN JOSE COMPUTER  
1944 E. ALAMOND RD  
SAN JOSE  
408-733-3315

B & C COMPUTERVISION  
3600 EL CAMINO REAL  
SANTA CLARA  
408-124-8668

ATCOM COMPUTERS  
121 THOUSAND OAKS BLVD  
THOUSAND OAKS  
805-467-1220

AUTOMATED COMPUTER  
SERVICE  
551 W. FOOTHILL BLVD  
UPLAND  
714-980-2101

TESTEK  
7024 VALJEAN AVE  
VAN NUYS  
818-786-0890

COMPUTER JUNCTION INC  
18006 7TH ST SUITE 214  
VICTORVILLE  
619-245-3622

## COLORADO

AMERICAN TELEVISION  
SERVICE CO  
1226 N. LITTLETON BLVD  
LITTLETON  
303-765-2043

LOOKING GLASS  
MICROPRODUCTS  
4232 WEST ELMHURST  
LYNDENHOLM  
303-688-8881

## FLORIDA

R & S ELECTRONICS INC  
3245 W. MONROE RD  
FT. LAUDERDALE  
305-978-6763

BOURQUE'S ELECTRONIC  
SERVICE  
180 WICHITA RD  
FT. AUSTIN BEACH  
904-882-8346

MR. SOFTWARE  
101 HOLLYWOOD FASHION  
CENTER  
HOLLYWOOD  
305-961-9080

ENTERTAINMENT SERVICES  
ELECT  
871 E. EDENWOOD AVE. S  
JACKSONVILLE  
904-786-1385

COMPUTER IMAGE  
10001 SUITE 107  
MIAMI  
305-271-1234

COMPU PHONE  
6180 EGGENWATER DR  
SUITE E  
DULAN  
305-256-1718

## GEORGIA

GEORGE'S ELECTRONICS  
JUNCTION SHOPPING CENTER  
ALBANY  
912-435-9005

NORMAN'S ELECTRONICS  
INC  
4041 PEACHTREE RD. NE  
ATLANTA  
404-237-3343

ELECTRONIC SPECIALISTS  
1605 EDNA PLACE  
MADISON  
912-742-5638

RADIOS AND  
MICROCOMPUTERS INC  
3635A WASHINGTON RD  
MARIETTA  
404-880-9571

HARRIS TV  
1 E. MONTGOMERY  
CROSSCROFT  
SAVANNAH  
912-927-0884

## HAWAII

KAMA COMPUTER  
75-5706 HANAUANA PL #137  
KAILUA-KONA  
808-328-8574

## ILLINOIS

DIGITAL WORLD INC  
711 ARMY TRAIL RD  
JACKSON  
312-545-9800

EMGA ENTERPRISES  
1624 N. 2ND ST  
ROCKFORD  
815-832-1477

## INDIANA

WRIGHT ELECTRONICS  
614 N. MAIN ST  
EVANSVILLE  
812-423-2845

CITIZEN'S TV & VIDEO  
107 W. GLEN PARK AVE  
GRINETH  
219-924-0047

THE COMPUTER CORNER  
7101 BROADWAY  
MERRILLVILLE  
219-738-3032

## KANSAS

MINIMAX APPLANCE  
SERVICE  
METCALF SOUTH MALL  
DOWLAND PARK  
913-341-6666

## KENTUCKY

FACTORY ELECTRONICS  
1422 PALMWOOD DR  
LEXINGTON  
606-269-7341

MANOVER TV HOSPITAL  
3027 CUMBERLAND AVE  
MIDDLESBORO  
606-246-3527

## LOUISIANA

COMPUTER ELECTRONICS  
1955 BALLAS DR  
BATON ROUGE  
504-924-8686

MASSACHUSETTS  
CUSTOM ELECTRONICS  
238 EDWARDS ST  
CHICOPEE  
413-582-1781

BRADON TV/ELECTRONICS  
& TELESTATION  
EVERETT  
617-389-6880

CONCOR SERVICE  
372 SOUTH MAIN ST  
SHARON  
617-794-2382

RECCOM INC  
1 E. MAIN ST  
WIRHAM  
617-235-2542

## MARYLAND

NATIONAL BUSINESS &  
SECURITY  
8639 LOCH RAVEN BLVD  
BETHESDA  
301-655-8870

EDGEMOND TV & AUDIO  
4832 EDGEMOND RD  
COLLEGE PARK  
301-441-5115

CROFTON TV & VIDEO  
1834 S. STEWART  
SPRINGFIELD  
417-887-3381

COMPLYVISION COMPUTER  
6445 BURWOOD PL  
DEN BURKE  
301-650-4255

ADVANCED COMPUTER  
SERVICE CO  
267 E. GREEN ST  
WESTMINSTER  
301-676-4332

## MAINE

AUTOMATIC SERVICES  
22 TARGET INDUSTRIAL  
CIRCLE  
BRIDGE  
207-942-6769

J.D. ELECTRONICS  
385 STEVENS AVE  
PORTLAND  
207-775-1411

## MICHIGAN

FUTURE DIRECTIONS  
166 MAIN ST  
CATHAM  
313-835-5888

THE FAMILY COMPUTER  
3815 W. 12 MILE RD  
BENTLEY  
313-643-9200

CHASE TRANSISTOR SERVICE  
501 LEONARD ST. NW  
GRAND RAPIDS  
616-454-9200

ARK ELECTRONIC SERVICE  
INC  
32 E. 14 MILE ROAD  
MADISON HEIGHTS  
313-565-8663

VIDEO ELECTRONICS  
545 SHATTUCK RD  
SAGINAW  
517-752-8668

## MINNESOTA

PHILIPS COMMUNICATIONS  
& TV  
746 N. E. HARRISON ST  
MINNEAPOLIS  
612-379-7908

USER FRIENDLY COMPUTER  
8405 PLAZA BLVD  
SPRING LAKE PARK  
612-768-8181

## MISSISSIPPI

SOUTHLAND ELECTRONICS  
25 E. OLIVE DR  
AURORA  
617-876-4823

MINIMAX APPLANCE  
SERVICE  
NETRO NORTH MALL  
KANSAS CITY  
816-432-7810

COMMUNITY SOUND & VIDEO  
1834 S. STEWART  
SPRINGFIELD  
417-887-3381

A & E ELECTRONICS COMP  
2021 BIG BEND BLVD  
ST. LOUIS  
314-645-7750

J & S VIDEO VISIONS  
1021 WASHINGTON SQUARE  
CENTER  
NASHINGTON  
314-939-2677

## MISSISSIPPI

ELECTRONIC SERVICES  
2315 25TH AVE  
CULPOT  
601-663-3772

## NORTH CAROLINA

SOUTHERN PHOTO  
TECHNICAL SHOP  
2610 SOUTH BLVD  
CHARLOTTE  
704-523-0212

## NEW JERSEY

DEPENDABLE PARTS INC  
166 MAIN ST  
CATHAM  
201-835-5888

S.R. DATA  
2141 WOODBRIDGE AVE  
EDISON  
201-362-5817

ADVANCED ELECTRONICS  
WILLAGE SHOPPING CENTER  
RT 205  
FLANDERS  
201-564-1252

TELSAR ELECTRONIC  
SERVICES INC  
829 STONE RD  
LAUREL SPRINGS  
609-783-6580

VIDEO ELECTRONICS  
COMPUTER SVC  
1418 REBELLE ST  
LINDEN  
201-325-1418

VIDEO CONNECTION OF  
SOMERSET  
600 EASTON AVE  
SOMERSET  
201-545-6793

K & S ELECTRONICS  
115 HAMILTON BLVD  
SOUTH PLAINFIELD  
201-755-4264

## NEW YORK

ISLAND VIDEO COMPUTER  
SERVICE  
25 MIDDLE COUNTRY RD  
CORAM  
516-758-1001

AURORA ELECTRONIC  
SERVICE  
44 CASTLE ST  
GREENV  
315-768-5295

LONG ISLAND COMPUTER  
GENERAL  
105 ATLANTIC AVE  
LYNKHORST  
516-667-1500

ABC ELECTRONICS SERVICE  
CO  
305 THURSTON RD  
ROCHESTER  
716-328-1843

## OHIO

ARJUN MICRO  
1385 BETHEL RD  
COLUMBUS  
614-459-4218

SIXTON FUN TV INC  
208 CLINTON ST  
DETROIT  
419-452-8545

COMPUTER CREATIONS  
424 E. STROOP RD  
KOTTENBERG  
543-894-2222

B AND G ELECTRONICS INC  
15793 MAXWELL AVE  
LAKESIDE  
216-321-2655

ERIC MARTIN & INC  
5485 WARRENVILLE CENTER  
RD  
MAPLE HILLS  
216-683-2030

VIDEO COMPUTER WORLD  
INC  
2223 WOODVILLE RD  
DEGRON  
419-891-7282

0000 03  
7705 W. RIDGEWOOD DR  
PARMA  
216-886-2826

## OREGON

NORTHWEST COMPUTER  
SUPPLY INC  
10200 SW WIMBUS DR  
PORTLAND  
503-684-3280

## PENNSYLVANIA

KIBLER'S INDEPENDENT TV  
526 FALLOUTOW AVE  
CHARLESTON  
412-483-7884

PARK T. MORGAN INC  
627 W. 26TH ST  
ERIE  
814-455-7588

DEBUS BYTES COMPUTERS  
682 PHILADELPHIA ST  
INDIANA  
412-349-7290

GRASS ELECTRONIC REPAIR  
HILLS PLAZA  
JOHNSTOWN  
614-286-1985

TESCO INC  
9237 RODGERS BLVD  
PHILADELPHIA  
215-677-5000



# atari service center

## NATIONAL TELEVISION

SERVICE  
5481 G3 PENN AVE  
PITTSBURGH  
412-361-5430

80Y0 TV  
710 LANCASTER AVE  
WAFBE  
215-686-3727

## ARIZONA

VIDEO ENCOUNTERS  
MAINES SHOPPING CENTER  
WAKEFIELD  
481-783-0480

## SOUTH CAROLINA

ELECTRONIC SERVICE CO  
1708 DECKER BUNG  
COLUMBIA  
803-782-5705  
COMSTAL TV & APPLANCE  
CO  
623 HWY 501  
CONWAY  
803-348-2586

## SOUTH FLORIDA

TAILORED AUDIOVISUAL INC  
1009 OAKDALE S  
HUNTER  
805-252-3205

## HOUSE OF TELEVISION

601 SOUTH COLLETT AVE  
BROOK HILLS  
805-338-9651  
TENNESSEE  
H-I-R SERVICE CENTER  
4808 HICKORY AVE  
CHATTANOOGA  
615-877-6781

BELL'S TV SALES & SERVICE  
3843 C DICKERSON RD  
NASHVILLE  
615-865-5600

## TEXAS

TV CENTER  
302 S WILLIAMS  
ABILENE  
915-677-1171  
PACIFIC STEREO  
525 110TH ST  
AUSTIN  
817-640-3094  
LONGSIGHT/ENTONIX  
5605 MAPLE AVE  
DALLAS  
214-358-3222  
COMPUTER HOME INC  
3548 KINDESBARGER  
SAN ANGELO  
915-944-9795

## UTAH

INTERWEST ELECTRONICS  
CORP  
4281 SOUTH STATE ST  
SALT LAKE CITY  
801-286-5381

## VIRGINIA

SALEM COMPUTER CENTER  
4034 PLANK RD  
FREDERICK  
703-768-6105  
VIDEO UNLIMITED SERVICE  
CENTER  
1187 ROUTE 17  
GRAFTON  
804-528-5375  
L & F ELECTRONICS  
187N JEFFERSON DRIVE  
HARRISBURG  
NECROBRIDGE  
703-494-2444

## WASHINGTON

CL LINE COMPUTERS PLUS  
12710 NE 20TH ST  
BELLEVUE  
206-644-2080  
BUTLER S TV & COMPUTER  
SERVICE  
28717 PACIFIC HWY SOUTH  
FEDERAL WAY  
206-941-8096

## ARTICULATE SYSTEMS

E 3425 BRADDAVE AVE  
SEASIDE CITY  
SPRINGFIELD  
509-322-8255

## JACKSON'S TELEVISION

SERVICE  
N 424 WALL  
SPRINGFIELD  
509-327-8558

## WISCONSIN

AUTHORITY'S TV  
812 NORTH ST  
GREEN BAY  
414-409-4215  
SUN & CITY WIDE TV  
1250 E JOHNSON ST  
MADISON  
608-255-4144  
MISER TV SERVICE  
5455 W BURLINGHAM ST  
MILWAUKEE  
414-341-2615

## WEST VIRGINIA

COMPUTERS PLUS INC  
2577 CHARLESTON TOWN  
CENTER  
CHARLESTON  
304-342-4846

## Next Month

# COMPUTER CHALLENGES

- ◆ Battle Of The Chess Programs
- ◆ Coverage Of Atari Meeting At Antic
- ◆ Inside Strategic Simulations Inc.
- ◆ Another Mind-Boggling Cover By Okamoto

## PARTS/SERVICE FOR ATARI COMPUTERS

FLAT SERVICE RATES BELOW INCLUDE PARTS AND LABOR

800 Computer Repair	\$45.00	880XL Computer Repair	\$57.50
480 Computer Repair	\$47.50	880 Disk Drive Repair	\$79.50
880XL Computer Repair	\$63.00	859 Interface Repair	\$40.00
1200XL Computer Repair	\$45.00	1050 Disk Drive Repair	\$85.00

Above units repaired or exchanged with inalterable exchange.  
Include \$7.00 return shipping and insurance.

## INTEGRATED CIRCUITS

GTIA Chip	CS48484
Upgrade with instructions	\$11.50
10K rev. "B" O.S. Upgrade	
2 chip rom set with instructions	\$12.50
Policy Chip	CO12294
Audio Chip	CO12296
PIA Chip	CO14793
CPU Chip	CO14806
Basic ROM set	\$15.00

## MODULES/CIRCUIT BOARDS...complete with ICs

16K Ram Memory Module	CS053	\$24.50
800 156 Rev. "A" O.S. Module		\$19.50
800/400 CPU Board with GTIA		\$24.50
800 Main Board	\$38.50	
400 Main Board	\$34.50	
400 Main Board W/O IC 5	\$18.50	
800 Power Supply Board	\$19.50	
816 Data Separator Board		
with instructions	\$26.00	
816 Side Board W/O Sep. & 1771	\$43.50	
816 Rear Power Board	\$25.00	
816 Analog Board	\$16.00	

## AMERICAN TV

Mail Order & Repair Address: 15321 Mainline St., San Leandro, CA 94579  
Retail Store: 1180 Washington Ave., San Leandro, CA 94577

Service: We accept money orders, personal checks or C.O.D. VISA/MasterCard OK on orders over \$15.00. No personal checks on C.O.D.

Shipping: \$4.00 shipping and handling on orders under \$50.00. Add \$2.00 for C.O.D. orders. CA. rates include 6.62% sales tax. Overseas shipping extra.

Parts subject to change without notice. We reserve the right to limit quantities. Sales limited to stock on hand. Radio Shack Item #5456 for free price list.  
Repair and upgrade services available. Call. \*Atari is a registered trademark of Atari Inc.

## REPLACEMENT/BACK UP BOARD SETS

800 --- OK ---	\$75.50
880 48K	\$115.50
400 OK	\$53.50
880 Board Set	\$110.00
816 Week	\$85.45
All Board Complete With IC's etc.	
Overseas customers ask for PAL price list	

## MISC.

810 Rear Board/Analog Board Upgrade	
with 13 pin jumper and instructions	\$19.50
Buffer Assembler	\$25.95
Exec Cartridge W/O Case, Manual	\$23.50
Cartridge Circuit Boards	\$4.90
Non-Atari Cartridge Boards	\$3.00
Non-Atari power transformer	\$16.50
Servo Repair Manual	\$4.90
for 800 or 400	\$17.50
800 Keyboard Repair	\$35.00
De Re Atari	\$12.50

PHONE 415-352-3767  
15321 Mainline St., San Leandro, CA 94579

# PASCAL For the Atari

kyan pascal is the most complete package available for learning and using the Pascal language. And now, it's available for the Atari family of computers.

kyan pascal is easy to use, lightning fast, and loaded with features. It's a full Pascal implementation and perfect for both beginning and advanced programmers.

## kyan pascal features:

- Optimized Machine Code Compiler,
- Built-In Full Screen Text Editor;
- String-Handling, Chaining, Include File, and Other Powerful Extensions.
- 13-Digit Arithmetic Precision and Full Graphics Support.
- Built-In Assembler (Allows Full Hardware Control); and,
- Tutorial Manual with Sample Programs

kyan pascal requires 48K of memory and a single disk drive. No additional hardware is necessary. And, it comes with kyan's MONEY BACK GUARANTEE. If not completely satisfied, return it within 15 days for a full refund.

kyan pascal for the Atari... \$69.95  
(Add \$4.00 shipping for non-USA. \$12.00 outside North America, California residents add \$4.50 shipping for sales tax)

Send Check/Money Order to:  
Cell: (415) 775-2923  
MC/Visa Accepted

kyan software, Dept. N  
1850 Union St., Ste. 183  
San Francisco, CA 94123

# new products



## AERO

(printer)  
Alphacom  
2323 South Bascom Ave.  
Campbell, CA 95008  
(408) 559-8000  
\$249.95

Described as an Epson-compatible dot-matrix printer, the Aero is rated at 130 cps. It uses a 6x9 matrix field, contains a 2K buffer and supports (all on the same line) superscript, subscript, double strike, enlarged and emphasized print and underlining.

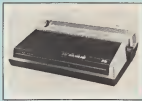


## PLUS WRITER

(printer)  
Alphacom  
2323 SO. BASCOM Ave.  
Campbell, CA 95008  
(408) 559-8000  
\$399

Alphacom claims this new 20 character-per-second daisy-wheel printer is the perfect printer for your Atari. Plugging directly into your Atari, the PlusWriter emulates the Diablo 630 and uses standard ribbons and daisy-wheels. We are told that the printer supports superscript, subscript, boldface, proportional spacing and underlining.

New Products notices are compiled by the Antic staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.



## GE 3-8100 PRINTER GE PRINTER INTERFACE MODULE

(printer and interface)  
General Electric Company  
Electronics Park  
Syracuse, NY 13221  
(315) 456-2446

\$299.95 (printer)  
\$89.95 (interface)

GE's foray into the home computer market includes a dot-matrix printer capable of "letter quality" print at 25 cps or regular draft printing at 50 cps.

The interface will connect the printer directly to an Atari.

## QUESTBUSTERS

(adventure newsletter)  
202 Hglin Court  
Wayne, PA 19087  
\$15/year

This monthly adventure game newsletter covers recent news, reviews, and the like. It is not Atari-specific.



## WIRE TREE PLUS

(line filter)  
Network  
203 Harrison Place  
Brooklyn, NY 11237  
(718) 821-7555  
\$99.95

This surge/spike filter not only protects electrical lines for computers and peripherals, but also protects two modular phone lines (providing exactly the kind of filtering and protection the Atari 1030 modem doesn't have).

## Q-MODEM

(modem)  
Quantum Microsystems Inc.  
P.O. Box 179  
Liverpool, NY 13088  
(315) 451-7747  
\$149.95

A 300-baud direct connect modem with autodial, autoanswer and other advanced features, the Q-Modem plugs directly into your Atari and fits in the palm of your hand. It even comes with the famous Quantum software, which uses color displays, on-screen menus, a built-in editor, multiple buffers and so on.

*Return the favor: When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future. —ANTIC ED*



# Turbo charge your Atari with an Indus GT.™

Introducing the all-new Indus GT™ disk drive. The most advanced, most complete, most handsome disk drive in the world.

A flick of its "Power" switch can turn your Atari into a Ferrari.

## **Looks like a Ferrari.**

The Indus GT is only 2.65" high. But under its front-loading front end is streamline engineering with a distinctive European-Gran flair.

Touch its LED-lit CommandPost™ function control AccuTouch™ buttons. Marvel at how responsive it makes every Atari home computer.

## **Drives like a Rolls.**

Nestled into its soundproofed chassis is the quietest and most powerful disk drive power system money can buy. At top speed, it's virtually unhearable. Whisper quiet.

Flat out, the GT will drive your Atari track-to-track 0-39 in less than one second. And when you shift into SynchroMesh DataTransfer™ you'll increase your Atari's baud rate an incredible 400%. (Faster than any other Atari system drive.)

And, included as standard equipment, each comes with the exclusive GT DrivingSystem™ of

software programs. World-class word processing is a breeze with the GT Estate WordProcessor™. And your dealer will describe the two additional programs that allow GT owners to accelerate their computer driving skills.

Also, the Indus GT is covered with the GT PortaCase™. A stylish case that conveniently doubles as a 80-disk storage tile.

## **Parks like a Beetle.**

The GT's small, sleek, condensed size makes it easy to park.

So see and test drive the incredible new Indus GT at your nearest computer dealer soon.

The drive will be well worth it.



# INDUS™

## **The all-new Indus GT Disk Drive.**

*The most advanced, most handsome disk drive in the world*



**Expand Your Atari**  
...With peripherals from MPP

## MicroPrint Parallel Printer Interface

- Works with Atari 400, 800, 600XL and 800XL
- Replaces Atari 850 Interface Module
- Compatible with all software
- 5-foot cable with Centronics plug (compatible with Epson, NEC, Prowriter, etc.)
- Connects to serial bus on computer
- 2 Year Warranty



### SOPHISTICATED SMART TERMINAL SOFTWARE ON CARTRIDGE

#### FEATURES:

- ☐ Supports XMODEM Protocol
- ☐ ASCII/ATASCII Translation
- ☐ Allows Transfer of Files Larger than Memory
- ☐ Upload/Download of Text and Programs
- ☐ 100% Machine Language
- ☐ Loads a 65 Column Screen Driver
- ☐ Multiple Buffers
- ☐ Off-Line Editing
- ☐ Variable Baud Rate
- ☐ Parity Options
- ☐ Full/Half Duplex

ONLY  
**\$149.95**

## MPP-1000C Modem

- Auto Answer / Auto Dial
- Direct Connect to Phone Line
- No Atari 850 Interface Module Needed
- Includes AC Adapter / Power Supply
- Free CompuServe DemoPak™
- 1 Year Warranty
- Connects to Joystick Port
- Works on ALL Atari Computers



**MICROBITS PERIPHERAL PRODUCTS**

225 Third Avenue, SW • Albany, OR 97321

ORDERS: 1-800-624-7532

CUSTOMER SERVICE: 1-503-967-9075

# RETROMAGS

Our goal is to preserve classic video game magazines so that they are not lost permanently.

People interested in helping out in any capacity,  
please visit us at [www.retromags.com](http://www.retromags.com).

No profit is made from these scans, nor do we offer anything  
available from the publishers themselves.

If you come across anyone selling releases from  
this site, please do not support them and do let us know.

Thank you!

